Alcohol Expectancies and Self-Efficacy as Moderators of

Social Anxiety and Alcohol Use Among College Students

Ian J. Ehrhart


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E. Scott Geller, Ph.D.

George A. Clum, Ph.D.

Robert S. Stephens, Ph.D.

Kent E. Glindemann, Ph.D.

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Abstract

Social anxiety is widely thought to be positively associated with alcohol use. However, these studies rely primarily on self-report of drinking behavior. This research aimed to further explore this research by assessing blood alcohol concentration (BAC), a physiological measure of alcohol intoxication, as the dependent measure in naturalistic settings (i.e., fraternity parties). Results from Study 1 suggest a weak relationship between self-reported anxiety levels and BAC. Study 2 was based on Burke and Stephen's (1999) proposed social cognitive model in which alcohol expectancies and drink-refusal self-efficacy act as moderators of the relationship between dispositional social anxiety and alcohol consumption. Analyses (n=86) did not support a relationship between social anxiety and alcohol use, nor the moderating effects of alcohol expectancies and drink-refusal self-efficacy. Implications for this type of research and possible future directions are discussed.

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Alcohol Expectancies and Self-Efficacy as Moderator of Social Anxiety and Alcohol Use

Among College Students

Introduction

Alcohol use continues to be a major concern among this nation's colleges and universities. Alcohol abuse contributes to a variety of negative consequences, ranging from physical harm to reduced academic success, as well as impaired decision-making and driving while intoxicated (DWI). In 1999, for example, 38% of all traffic fatalities occurred in crashes with at least one legally intoxicated driver, resulting in 15,786 fatalities (National Highway Traffic Safety Administration, NHTSA, 2000).

Wechsler and his colleagues (2000) reported 44% of college students in 1999 were classified as binge drinkers (defined as consuming five or more alcoholic drinks in a sitting for men and four or more drinks in a sitting for women), and 24% were classified as frequent binge drinkers. Furthermore, survey research suggests: a) 80% to 90% of all college students consume alcoholic beverages (Wechsler et al., 1994), b) almost half of all college students are high-risk drinkers (Wechsler et al., 2000), c) many students drink with the clear intention of intoxication (Glindemann, Geller, & Ludwig, 1996), and d) 8.3% of college students report consumption of 16 or more alcoholic beverages per week (Presely, Meilman, & Lyerla, 1993).

Why is alcohol use so prevalent and elevated among college students? The reasons are seemingly numerous, from attempts to reduce depression or stress to drinking inexperience, peer pressure, and the college student's sudden independence from family. The proposal research aims to examine yet another possibility. Specifically, feelings of insecurity or anxiety in social situations (i.e., fraternity parties, bars, etc.) can trigger expectancies that alcohol can help to ameliorate these symptoms, leading to increased alcohol consumption.

*Social Anxiety*

Social anxiety is defined as a persistent fear of embarrassment or negative evaluation while engaged in social interaction or public performance (Heimberg et al., 1999). Burke and Stephens (1999) report, based on previous research, "individuals will experience feelings of social anxiety when their behavior is subject to the real or imagined scrutiny of others or when motivated to make a good impression but have doubts about their ability to do so" (p. 521). A fraternity party is an example of a setting where pressures to fit in and be social can serve to activate these feelings of social anxiety, and in turn motivate increased alcohol consumption in an attempt to ameliorate these symptoms.

There are mixed results in the current research about this relationship. While some studies report positive associations between social anxiety and alcohol consumption (Kidorf & Lang, 1999), problem drinking (Lewis & O'Neill, 2000), and alcohol-related problems and dependence (Gilles, Turk, & Fresco, 2005), others report either no relation or negative relationships (Ham & Hope, 2005; Tran, Haaga, & Chambless, 1997).

Several theoretical models have been offered to explain the anxiolytic effects of alcohol. In 1956, Conger offered the Tension Reduction Hypothesis. This model posited that alcohol reduces tension and individuals drink alcohol to derive these tension-reducing effects. The Stress-Response Dampening Model (Levenson et al., 1980) suggests alcohol dampens the response one has to a stressor, making it a powerful reinforcer.

Current research suggests this relationship is more complicated than these medical models purport. For example, Burke and Stephens (1999) offer a Social Cognitive Model to explain the anxiety-reducing effects of alcohol, which incorporates aspects of alcohol expectancy and self-efficacy research to achieve a more complete understanding of this relationship.

Specifically, the model addresses the moderational role alcohol expectancies and drink-refusal self-efficacy may play in the relationship between alcohol consumption and social anxiety. Specifically, those who hold positive alcohol expectancies will consume more alcohol than those who hold negative alcohol expectancies. Further, those more confident in their ability to avoid heavy drinking in social situations will be less likely to reach at-risk levels of intoxication. In this model, those most at risk would be individuals indicating high levels of social anxiety, positive alcohol expectancies, and low drink-refusal self-efficacy.

Gilles, Turk, and Fresco (2005) set out to test this model, as proposed by Burke and Stephens (1999). Using a sample of 118 college students, a significant three-way interaction was found between social anxiety, alcohol expectancies, and drink-refusal self-efficacy for amount and frequency of alcohol consumption. High positive alcohol expectancies and low drink-refusal self-efficacy led to increased alcohol consumption among those with high levels of social anxiety. With this sample, the hypothesized model of Burke and Stephens (1999) was supported.

*Alcohol Expectancies*

Derived from Bandura's (1977) concept of outcome expectancy, alcohol expectancies are the belief that consuming alcohol will lead to a specific outcome. For the purposes of this paper, it is the belief (or disbelief) that consuming alcohol will reduce feelings of social anxiety and increase sociability and assertiveness. Similarly, alcohol expectancies have been found to be strongly associated with drinking in response to antecedent tension (Young & Oei, 2000).

These expectancies are not formed after one's first sip of alcohol, but rather may be established long before, as early as age six and increase with age, with a large spike occurring between third and fourth grade (Miller, Smith, & Goldman, 1990). Everything from television to

parental behavior can help to form a person's alcohol expectancies, without ever having experienced the effects of alcohol firsthand.

Research has found positive relations between social anxiety and alcohol expectancies (Brown & Munson, 1987; Burke & Stephens, 1997; Leonard & Blane, 1988) and alcohol consumption (Lewis & O'Neill, 2000) among college-student populations. Burke and Stephens (1999) report in social interactions within an environment where drinking is normative, feelings of social anxiety may activate alcohol expectancies of social anxiety reduction and social facilitation. Truly, many social environments college students encounter are those where drinking is normative, such as fraternity parties, private parties, and bar settings. However, this relationship is unclear as a study by Eggleston and colleagues (2004) did not support the moderational effect of alcohol expectancies on social anxiety and alcohol consumption.

*Self-Efficacy*

The principle of self-efficacy (Bandura, 1987) posits that people will engage in worthwhile behaviors if they believe they will be able to perform these behaviors competently. With regard to alcohol use, it is the belief the individual will be able to consume alcohol moderately (or avoid alcohol all together) in situations where the temptation to consume alcohol is high. A fraternity party is one situation where alcohol use is not only prevalent, but encouraged. In this environment, a high level of self-efficacy to avoid heavy drinking is needed to resist situational temptations.

Much research on self-efficacy for avoiding high levels of alcohol consumption using college-student populations reach similar conclusions: low self-efficacy leads to increased alcohol consumption (Evans & Dunn, 1995; Reis & Riley, 2000). In one study, Burke and Stephens (1997) found an inverse relation between social anxiety and self-efficacy among

college students. That is, those reporting high levels of social anxiety also reported low levels of self-efficacy for avoiding heavy alcohol consumption. They posited feelings of inadequacy promoted by social-anxiety-producing situations serve to reduce overall confidence and therefore self-efficacy.

*Differential Influence of Alcohol Expectancies and Self-Efficacy*

It has been proposed that alcohol expectancies and drink-refusal self-efficacy have differential influences on drinking behavior. In a study by Lee and Oei (1993), drink-refusal self-efficacy was related to both alcohol consumption frequency and quantity, while alcohol expectancies were only related to frequency. Further, Oei and Burrow (2000) reported, although alcohol expectancies and drink-refusal self-efficacy are both associated with increased alcohol consumption, drink-refusal self-efficacy plays a more critical role in this relationship.

*Front-loading of Alcohol*

Front-loading of alcohol is defined as consuming alcohol in preparation of attending a social situation where alcohol is consumed later in the evening. In other words, front-loading refers to alcohol an individual consumes before actually arriving at a fraternity party or bar. Reasons for front-loading range from the anticipation of not liking the alcohol served at a fraternity party (usually inexpensive, low-quality beer) to not being of legal age to purchase alcohol in a bar setting. Another possible reason for front-loading is to experience a reduction in anxiety. Individuals may consume a few drinks before leaving their homes to enhance relaxation and perceptions of social competence in preparation of attending a potentially anxiety-producing social situation (i.e., a crowded fraternity party).

Unfortunately, front-loading has rarely been studied systematically. In a recent study by Glindemann, Ehrhart, Maynard, and Geller (in press), 69% of participants (from a sample of

1,528) reported they had front-loaded before going downtown to drink for the evening. Furthermore, those participants who front-loaded *and* consumed alcohol in a bar setting after arriving downtown reached at-risk levels of intoxication, compared to those who only front-loaded and those who only consumed alcohol in a bar (i.e., did not front-load). Although some reasons for front-loading before attending a fraternity party may differ than those before going to bars, both environments can be seen as producing social anxiety, and the alleviation of this anxiety is a plausible reason to front-load.

## Study 1

This study aimed to compare a physiological measure of intoxication, Blood Alcohol Concentration (BAC), with partygoers' self-reported anxiety levels. It was hypothesized self-reported anxiety level would be positively related to BAC.

## Method

*Participants and Setting*

Data were collected at 13 fraternity parties hosted by six different fraternities, at both on- and off-campus houses, during the Fall 2002 and Spring 2003. Overall, BACs were assessed from 905 participants (578 men, 312 women) between the ages of 18 and 28.

*Measures*

Participants were administered the At-Party Questionnaire (APQ) which assessed demographic variables and self-reported drinking behaviors. It also assessed self-reported anxiety levels both before arriving at the party (Anxiety Before; "on a scale from 0 to 3, how anxious were you before you arrived at tonight's party?") and while at the party (Anxiety Now; "on a scale from 0 to 3, how anxious are you feeling right now."). The APQ took about two minutes to complete.

*Procedures*

Two to four teams of three research assistants (RAs) each arrived at the parties and collected data from 12:00 a.m. to 1:00 a.m. Partygoers were asked to participate in a study on college-student alcohol consumption and informed consent was obtained. The participant then completed the APQ and was directed to the RAs conducting breathalyzer assessments. Before receiving this assessment, participants were asked to swish 2 oz. of water to remove any residual alcohol from their mouths and avoid artificial inflation of BAC levels. (A more detailed explanation of this methodology is given in Study 2 described later in this report). After receiving BAC feedback, the participants were thanked for their participation and strongly advised not to drive if they had a BAC $\geq$ .05.

*Apparatus*

BACs were assessed using hand-held Lifeloc FC20 breathalyzers (accuracy +/- .005, Lifeloc Technologies, Wheat Ridge, CO). The breathalyzers are calibrated monthly to ensure accuracy.

Results

The mean BAC for all participants was .097 (SD = .060), ranging from .000 to .293. The mean "Anxiety-Before" score was .52 (SD = .85), ranging from 0 to 3. The mean "Anxiety-Now" score was .56 (SD = .88), ranging from 0 to 3. The mean "Total-Anxiety" score (Anxiety Before plus Anxiety Now) was 1.08 (SD = 1.58), ranging from 0 to 6. Table 1 depicts these data in tabular form.

A correlational analysis revealed that BAC was positively correlated with Anxiety Before ($r$ = .094, $p$ < .01), Anxiety Now ($r$ = .092, $p$ < .01), and Total Anxiety ($r$ = .102, $p$ < .01). Self-

reported anxiety was positively related to participant intoxication. However, it should be noted these correlations are very small.

To assess if there were differences between partygoers reporting anxiety and those reporting no anxiety at all, a one-way ANOVA by Anxiety Category (Total Anxiety = 0, Total Anxiety > 0) was performed on the dependent measure BAC, revealing a significant main effect, $F(1, 903) = 5.18$, $p < .05$. Partygoers reporting no anxiety during the evening had a mean BAC of .093, while those reporting any anxiety for the evening had a mean BAC of .102 (see Figure 1).

## Discussion

From these results, there is evidence of a positive relationship between partygoers' self-reported anxiety levels and their intoxication level. However, the magnitude of these correlations is small and should be interpreted with caution. Further, significantly higher BACs were seen among partygoers reporting any anxiety at all, compared to peers who reported no anxiety at all. Though it appears some relationship does exist between self-reported anxiety level and alcohol intoxication, this study evidenced several weaknesses which warrant follow-up investigation.

One weakness is the fact the term "anxiety" was not operationally defined for the participants, but rather left to their own subjective interpretations. Because anxiety is defined differently by different people, partygoers may have interpreted it as stress or excitement, as opposed to a more clinical interpretation. This could be reconciled by administering participants a validated measure of anxiety – one where the term is operationally defined.

Another weakness concerns the Anxiety Before measure, which asked participants to recall their anxiety level from earlier in the evening. This estimation could prove difficult for a sober participant, let alone one who had been consuming alcohol (possibly large quantities) for a

better part of the evening. In fact, any assessment obtained from potentially intoxicated participants raises important validity questions.

Study 2 attempted to address some of these concerns. Specifically, the main dependent measures used demonstrated psychometric reliability and validity, reducing the potential for subjective interpretation of the constructs being assessed. Further, these measures were completed while participants were beyond the fraternity party environment. Presumably, participants would be less likely to be intoxicated at this time, greatly reducing the influence of alcohol in completing the assessment, though this could not be substantiated.

<center>Study 2</center>

This study aimed to add to the research of the moderating roles alcohol expectancies and self-efficacy play in the relationship between social anxiety and alcohol consumption among college students. Past studies have relied on self-reported drinking history as a measure of drinking behavior. As in Study 1, this field study differs from prior research in that a physiological measure of intoxication (i.e., BAC) was acquired at the fraternity party where relevant alcohol consumption occurred. From this, a participant's actual level of intoxication in a social anxiety-producing environment was compared to their self-reported level of trait social anxiety (as measured by the Interaction Anxiousness Scale described below), alcohol expectancies, and self-efficacy for avoiding heavy drinking.

From the relevant literature review and Study 1, it was hypothesized: 1) those with high levels of social anxiety will become more intoxicated than those with low levels of social anxiety, 2) those reporting high levels of social anxiety and positive expectancies about the anxiolytic effects of alcohol will become more intoxicated than those with high levels of social anxiety but less positive expectancies about the anxiolytic effects of alcohol, 3) those reporting

high levels of social anxiety and low levels of self-efficacy for avoiding heavy drinking will

become more intoxicated than those with high social anxiety and high levels of self-efficacy for

avoiding heavy drinking, 4) those reporting high levels of social anxiety, positive alcohol

expectancies, and low self-efficacy for avoiding heavy drinking will become more intoxicated

than those reporting high levels of social anxiety, positive alcohol expectancies, and high self-

efficacy for avoiding heavy drinking and those with negative alcohol expectancies, and 5) those

reporting high levels of social anxiety will front-load more than those reporting low levels of

social anxiety.

<div align="center">Method</div>

*Participants*

Participants ($n = 319$; 216 men, 103 women) were college students attending one of

seven fraternity parties hosted by four different fraternities during the Spring 2005 semester.

Because three of the fraternities hosted two parties each, there was potential for participants to

complete all measures and have their BAC assessed at both parties. In this case, participants'

data from only the first party were kept ($n = 18$; 14 men, 4 women). Of the remaining 301

participants, 215 (156 men, 59 women) were excluded because they did not complete all

measures, leaving 86 participants (46 men, 40 women) between the ages of 17 and 22 ($M = 19.5$)

for final data analysis.

*Measures*

*Interaction Anxiousness Scale (IAS).* The IAS (Leary, 1983, 1993) is a 15-item scale

designed to assess dispositional (or trait) social anxiety. Responses are recorded on a scale

ranging from 1 (the statement is *not* at all characteristic of me) to 5 (the statement is *extremely*

characteristic of me), resulting in an overall score ranging from 15 to 75, with higher scores

indicating higher levels of dispositional social anxiety.

Burke and Stephens (1997) employed the IAS as a dependent measure in a study

examining the effect of anxious affect on drinking self-efficacy. In an analysis of 1,864

respondents over ten years, the IAS demonstrated high internal reliability, with all alphas greater

than .85 (Leary, 1993). Eight-week test-retest validity has also been reported ($\alpha$ = .80) in an

earlier study (Leary, 1983). Also reported is evidence of construct validity between the IAS and

measures of social discomfort (*r*'s ranging from .36 to .88) and modest criterion-related validity

evidenced by positive correlations between the IAS and self-reported anxiety (*r*'s ranging from

.26 to.48), and a negative correlation between the IAS and self-reported confidence in a social

encounter (*r* = -.44) (Leary, 1993).

*Alcohol Expectancy Questionnaire (AEQ).* The AEQ (Brown, Christiansen, & Goldman,

1987) is a 90-item scale designed to assess beliefs regarding the effects of moderate alcohol

consumption. Participants indicate Agreement or Disagreement with each of the statements on

the AEQ. To increase response variability for this study, an alternate scoring scheme was devised

in which responses were recorded from 1 (completely disagree) to 6 (completely agree), in

essence splitting each of the original categories into three subcategories. Using this six-point

scale, George and colleagues (1995) provided marginal support for goodness-of-fit (NFI = .869,

CFI = .881, RMSR = .04[1]) to the original six-factor model of the AEQ.

For this study, only the Social Assertiveness and Relaxation/Tension Reduction scales

were administered because they have the greatest relevance to the hypotheses of this study,

resulting in a 20-item measure. Kidorf and Lang (1999) used this same rationale to examine the

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[1] NFI = Normed Fit Index (Bentler & Bonnett, 1980), CFI = Comparative Fit Index (Bentler, 1989), RMSR = Root-Mean-Square Residual

role of social anxiety and expectancies on stress-induced drinking. Items assessing Social Assertiveness include "Alcohol allows me to be more assertive" and "I find that talking with people of the opposite sex is easier after I've had a few drinks." Items purporting to measure Relaxation/Tension Reduction include "Alcohol makes my muscles relax" and "If I am tense or anxious, having a few drinks makes me feel better." Both scales show good internal consistency, ranging from .54 to .76 (Brown et al., 1987).

*Situational Confidence Questionnaire (SCQ-39).* The SCQ-39 (Annis & Graham, 1988) is a 39-item scale designed to assess confidence in resisting high levels of alcohol consumption across different tempting situations. For this study, a modified version of the SCQ-39 (SCQ-39M; Burke & Stephens, 1997) was administered. This 26-item scale is not only shorter, but includes items applicable to a college student population.

The survey items can be divided into two subscales, self-efficacy for avoiding heavy drinking in positive situations (10 items) and self-efficacy for avoiding heavy drinking in negative situations (10 items). An additional six-item subscale was also included to assess self-efficacy for avoiding heavy drinking in social-anxiety-producing situations.

An alternative social anxiety subscale was created using this six-item subscale plus three items from the positive affective states subscale. Responses are recorded for each item on a scale from 0% (not at all confident) to 100% (very confident) in increments of 20 percentage points (0%, 20%, 40%, etc.). Higher overall scores indicate higher self-efficacy for avoiding heavy drinking. Alphas range from .86 to .95 for the three subscales, indicating excellent internal consistency (Greaves & Stephens, 1992).

Because of an error in the online programming of the Post-Party Questionnaire (see below), only some participants were administered the 26-item version of this scale (*n* = 34,

39.5% of the sample). The other 52 participants received only a partial version of the SCQ-39M containing 15 items (this shorter version is referred to as the PSCQ). Although scores on these two version were significantly correlated ($r = .904$, $p < .001$), a t-test analysis conducted using the 34 participants who completed the full version of the SCQ-39M revealed a significant difference between scores on the SCQ-39M and the PSCQ, $t$ (33) $= 4.99$, $p < .001$. Please refer to Table 2 for a list of all measures and their associated subscales.

*Other Measures*. The At-Party Questionnaire (APQ; see Appendix A) was administered in the field (i.e., at a fraternity party) and assesses front-loading behavior as well as demographic characteristics and self-reported drinking behaviors. In addition, two general questions were included to assess anxiety level ("How anxious do you usually feel in social situations such as this one?") and alcohol expectancies ("To what extent do you believe alcohol helps to reduce this anxiety?"). Responses are recorded on a scale from 1 (none) to 6 (completely).

The Post-Party Questionnaire (PPQ; see Appendix A) is taken as close in time as possible after the data-collection party, usually within one to three days, and includes the IAS, AEQ, and SCQ-39M, as well as items assessing demographic characteristics, drinking history, party-drinking recollection, negative outcomes as a result of drinking, and party-related experiences. Participants either completed the PPQ online (for non-host-fraternity members) or by paper and pencil (for host-fraternity members).

All questionnaires were linked using a six-character anonymous participant code. This code consisted of the first two letters of the city in which the participant was born, the first two letters of their mother's maiden name, and the number of the month in which they were born. This code was chosen because of its ease of recall to those filling out different questionnaires at different times.

*Apparatus*

As in Study 1, BACs were assessed using hand-held Lifeloc FC20 breathalyzers (accuracy +/- .005, Lifeloc Technologies, Wheat Ridge, CO). Breathalyzers are calibrated monthly to ensure accuracy.

*Procedure*

*Fraternity selection*. Fraternities were selected from those already involved in research funded by the National Institutes of Health (NIH) and conducted by the Center for Applied Behavior Systems (CABS). Because some fraternities were involved in research projects that included interventions to decrease alcohol use among college students, data for this study were only collected at baseline parties to rule out the intervention as an extraneous variable. Care was taken not to inform the fraternities ahead of time at which parties data collection teams would be present. This was to ensure fraternity members' drinking behavior was not influenced by the anticipation of BAC measurement.

For their participation, fraternities received $100 for each party they hosted where data were collected, and $25 for each meeting at which the PPQ was administered. This financial reward was to be placed into the fraternity's scholarship fund, payable at the end of the semester. This financial support was provided by a grant from the National Institute on Alcohol Abuse and Alcoholism (Grant # 1-R01-AA014420-01).

*Party raffle*. At each party, there was an incentive for partygoers to participate in the research, namely a chance to be entered into a raffle for $100 cash. To be entered into the raffle, partygoers must have completed the APQ and had their BAC assessed. This incentive was offered to ensure the sample was representative of partygoers. That is, to ensure participants were not only partygoers who were highly intoxicated and curious about how high their BAC

was, but also included those who were less intoxicated or completely sober. The rationale behind

this is sober partygoers already know their BAC (i.e., .000), so little would be gained from

having their BAC assessed. By offering the chance to win $100, less intoxicated partygoers were

given an incentive to receive a BAC assessment. The $100 was awarded at the party after data

collection had been completed (usually around 1:10 a.m.).

     *Party data collection*. At each chosen fraternity party, two to four teams of three research

assistants (RAs) collected data for exactly one hour, from 12:00 a.m. to 1:00 a.m. Previous

research conducted in this environment has indicated that between 11:30 p.m. and 12:30 a.m. is

the time of night with the highest concentration of partygoers (Geller & Glindemann, 2000).

Further research has indicated that by delaying data collection times by thirty minutes, not only

will there be a peak concentration of partygoers, but drinking levels will have also started to

level off. The data collection teams arrived at the parties around 11:45 p.m. in order to have time

to get into position and set up their equipment. They were positioned throughout the party

environment where a representative sample of partygoers could be obtained. For example, teams

were placed in the kitchen, basement/dance floor area, living room, and outside areas (weather

permitting) of the fraternity houses.

     Each RA on a data collection team had a specific task. These included obtaining

informed consent, administering the APQ, and assessing BACs. The RA responsible for

obtaining informed consent went into the crowd and asked partygoers if they would like to have

their BAC assessed for free (clarification was offered if partygoers were not familiar with this

term) and a chance to win $100 cash. Refusal (i.e., a partygoer did not want to participate) and

"Come Back Laters" (i.e., a partygoer did want to participate, but at a later time) were recorded

on a tally sheet.

If partygoers chose to participate and were *not* a member of the host fraternity, they were given a reminder card with the web address for the PPQ printed on it. Their email address was recorded so they could also be sent a reminder via email containing the same web address found on the reminder card. Participants' email addresses were entered into the Blind Carbon Copy field to protect confidentiality. At the conclusion of data collection for this project, papers containing participant email addresses were shredded and all emails deleted.

Partygoers were informed their participation was anonymous, confidential, and they had the freedom to withdraw at any time. They were also informed confidentiality could be broken if they registered a dangerously high BAC ($\geq$ .250). The RA obtained the partygoer's signature and ID number (i.e., Virginia Tech student number), the signature of a witness (usually one of their friends), and then signed the informed consent themselves as the researcher. They then directed the participant to the RA administering the APQ.

Before receiving the APQ, participants were asked to discontinue drinking (if they had alcohol with them) for the rest of the assessment in order to obtain an accurate breath sample. Administration of the APQ took about two minutes.

After completing the APQ, participants were directed to the RA assessing BACs. First, participants were asked to take any gum or candy out of their mouths and to avoid smoking cigarettes or drinking alcohol until after the breathalyzer test had been administered. They were then given 2 oz of water to rinse their mouths and remove any residual alcohol. After their mouths were rinsed, participants were asked to not smoke, drink alcohol, or put gum or candy back in their mouths until the breathalyzer administration was completed. For the BAC assessment, they were asked to take a deep breath and breathe as long and hard as possible into

the breathalyzer to ensure a deep-lung alveolar air sample. A new, clean breath tube (what the participant blows into) was used for each participant.

After the sample had been analyzed (usually 5 to 10 seconds), participants were confidentially shown their BAC. The BAC was also shown to the RA administering the APQ so it could be recorded with the participant's questionnaire data. For this reason, these two RAs stayed relatively close to each other during data collection. Participants' hands were then marked with a psi (Ψ) to signify they had a BAC assessment. Only one BAC assessment was permitted per partygoer to prevent them from misusing the breathalyzer test to see how intoxicated they could become. The participant's name was then recorded on a raffle ticket. They were thanked, and advised not to drive if they had a BAC $\geq$ .05. If a participant registered a BAC of .250 or greater, their friends and/or the fraternity's sober crew were notified for special monitoring.

*Post-party questionnaire*. The PPQ was administered as close to the party date as possible, within one to three days. All participants had the chance to complete the PPQ, including the IAS, AEQ, and SCQ-39M, administered differently to host fraternity members than to general partygoers. Members of the host fraternity were given the PPQ at their mandatory weekly meeting following the data-collection party (usually Sunday or Monday). Participants who were not members of the host fraternity were given the opportunity to complete an online version of the PPQ. As described above, web address cards were given to participants at the party and reminder emails were sent out the day after the party containing a hyperlink to the online PPQ. For their completion of the online PPQ, participants were entered into a raffle to win $250, drawn at the end of the semester.

Results

*Attrition Analyses*

Because a large portion of the sample did not complete all measures or otherwise could not be matched (i.e., their APQ couldn't be matched with their PPQ), an attrition analysis was performed to discern if any differences were present between the matched ($N = 86$) and non-matched ($N = 215$) samples on items assessed on the APQ, which all participants completed. A series of one-way ANOVAs on Match Status (matched vs. non-matched) were performed on the dependent measures Total Drinks Front-Loaded, Total Drinks At Party, At-Party Anxiety, At-Party Expectancies, and BAC. The ANOVA on Total Drinks Front-Loaded was significant, $F(1, 298) = 4.86$, $p < .05$. That is, non-matched participants front-loaded an average of 1.1 more drinks than matched participants. However, this difference had minimal impact on participants' overall intoxication level as there was no significant difference between these groups with regard to BAC, $F(1, 299) = .182$, $p > .10$. No other ANOVAs were significant, all $p$'s $> .10$. As such, the matched sample seems to be representative of the total sample of partygoers.

Chi-square analyses were performed to examine possible differences between groups on the demographic variables of Gender (men vs. women), Greek Status (fraternity/sorority members vs. non-members), and Host Member (host fraternity member vs. party guest). The Chi-square for Gender was significant, $X^2(1) = 10.12$, $p < .001$, with women being more likely to be matched than men. Overall, 40.4% of women were able to be matched, while only 22.8% of men were matched. The Chi-squares for Greek Status and Host Member did not reach significance, $p$'s $> .10$. This suggests there may be a gender-based selection bias, with women being more likely to complete the online PPQ a few days after a party.

*Primary Analyses*

As stated above, the primary analyses were performed on a sample of 86 participants (46 men, 40 women). Summary statistics for this sample are shown in Table 3.

*Correlations.* To examine the relationship between actual alcohol consumption and self-report measures, correlational analyses were conducted on BAC and participant responses on independent measures, including the IAS, AEQ, SCQ-39M and items from the APQ (Front-loading, At-Party Drinks, At-Party Anxiety, At-Party Expectancies). No significant correlations were found between participants' BACs and At-Party Expectancies ($r = .176$, $p > .05$), IAS Total Score ($r = -.013$, $p > .05$), AEQ Total Score ($r = .076$, $p > .05$), SCQ-39M Total Score ($r = -.223$, $p > .05$), or PSCQ Total Score ($r = -.169$, $p > .05$).

Significant positive correlations were found between BAC and several items from the APQ. BAC was significantly correlated with both Front-Loading ($r = .336$, $p < .01$) and At-Party Drinks ($r = .348$, $p < .001$). That is, the more alcohol consumed before arriving at fraternity parties, as well as at the parties themselves, the higher their overall BAC for the evening. These findings are not surprising, as alcohol consumed at any point in the evening would contribute to one's overall BAC.

BAC was also significantly positively correlated with At-Party Anxiety ($r = .234$, $p < .05$), suggesting a relationship, if only a small one, between BAC and self-reported anxiety. Finally, BAC was significantly correlated with the At-Party Anxiety X At-Party Expectancies interaction term ($r = .288$, $p < .01$). See Table 4 for the results of all correlational analyses.

*Regression.* To explore the five experimental hypotheses, simple or moderated regression analyses were performed, depending on the predictor(s) examined. Though only the results of the full-model are presented here, Table 5 shows further statistics from these analyses.

To explore the first hypothesis, that those with high levels of social anxiety will become more intoxicated than those with low levels of social anxiety, the dependent variable BAC was regressed onto IAS Total Score. The IAS Total Score was not a significant predictor of one's overall BAC, $F(1, 84) = .018, p > .10$. Hypothesis 1 was not supported.

To explore the second hypothesis, that those reporting high levels of social anxiety and positive expectancies about the anxiolytic effects of alcohol will become more intoxicated than those with high levels of social anxiety and less positive expectancies about the anxiolytic effects of alcohol, a moderated multiple regression was performed on the dependent measure BAC. For the first step, the IAS Total Score and AEQ Total Score were entered into the equation. The IAS X AEQ interaction term was entered as the second step. The full model did not reach significance, $F(3, 82) = .171, p > .10$. Hypothesis 2 was not supported.

To explore the third hypothesis, that those reporting high levels of social anxiety and low levels of self-efficacy for avoiding heavy drinking will become more intoxicated than those with high social anxiety and high levels of self-efficacy for avoiding heavy drinking, a moderated multiple regression was performed on the dependent measure BAC. For the first step, IAS Total Score and SCQ-39M Total Score were entered into the model. The IAS X SCQ-39M interaction term was entered into the model as the second step. The full model did not reach significance, $F(3, 30) = .969, p > .10$. It is noteworthy that this analysis was only performed on a sample of 34, as not all participants received the full version of the SCQ-39M. As such, this analysis was also performed using the PSCQ Total Score. As with the full version of the SCQ-39M, the full model did not reach significance, $F(3, 82) = .815, p > .10$. Hypothesis 3 was not supported.

To explore the fourth hypothesis, that those reporting high levels of social anxiety, positive alcohol expectancies, and low self-efficacy for avoiding heavy drinking will become

more intoxicated than those reporting high levels of social anxiety, positive alcohol expectancies, and high self-efficacy for avoiding heavy drinking and those with negative alcohol expectancies, a moderated multiple regression was performed on the dependent measure BAC. For the first step, IAS Total Score, AEQ Total Score, and SCQ-39M Total Score were entered into the equation. The IAS X AEQ X SCQ-39M interaction term was entered as the second step. The full model did not reach significance, $F(4, 29) = .770$, $p > .10$. For reasons stated above, a similar analysis was performed replacing the SCQ-39M Total Score with the PSCQ Total Score. As with the previous analysis, the full model did not reach significance, $F(4, 81) = 912$, $p > .10$. Hypothesis 4 was not supported.

To explore the fifth hypothesis, that those reporting high levels of social anxiety would front-load more than those reporting low levels of social anxiety, the dependent variable Total Drinks Front-Loaded was regressed onto IAS Total Score. IAS Total Score was not a significant predictor of one's Total Drinks Front-Loaded, $F(1, 84) = 1.21$, $p > .10$. Hypothesis 5 was not supported.

As shown from the above results, none of the five research hypotheses were supported. Neither the IAS, AEQ, SCQ-39M, PSCQ, nor their potential moderational influences were found to be predictors of overall BAC or Total Drinks Front-Loaded. Because of this, a group of secondary analyses were performed to explore further relations that may exist between the predictor and dependent variables. In the interest of space, only significant findings are detailed.

*Measure subscales*. Regressions were also performed to examine the relationships that may exist between predictor measure subscales and the dependent variables (i.e., BAC and Total Drinks Front-Loaded) as listed in Table 2. As with the regression performed above, no

significant relationships were revealed between any subscale, subscale combinations, or interaction terms and the dependent measures, all $p$'s > .10.

*Total Sample Analyses*

As mentioned above, participants responded to two hypothesis-related questions on the APQ, assessing social anxiety ("How anxious do you usually feel in social situations such as this one?") and alcohol expectancies ("To what extent do you believe alcohol helps to reduce this anxiety?"). The dependent measures of At-Party Anxiety and At-Party Expectancies were obtained from the total sample of 301 participants in the fraternity setting. Many of these participants had been excluded from the primary analyses because they had not completed or were not able to be matched with PPQs (and thus could not be matched with the IAS, AEQ, or SCQ-39M). Summary statistics for this sample are found in Table 6.

To examine the relationship between actual alcohol consumption and self-report measures, correlational analyses were conducted on BAC and participant responses on the APQ (Front-loading, At-Party Drinks, At-Party Anxiety, At-Party Expectancies). See Table 7 for the results of all correlational analyses using this sample.

As with the experimental sample used for the primary analyses (n = 86), significant positive correlations were found between BAC and several items on the APQ. BAC was significantly correlated with both Front-Loading ($r$ = .313, $p$ < .001) and At-Party Drinks ($r$ = .352, $p$ < .001). Again, the more alcohol consumed before arriving at fraternity parties, as well as at the parties themselves, the higher their overall BAC for the evening. BAC was also significantly positively correlated with At-Party Anxiety ($r$ = .167, $p$ < .01) and the At-Party Anxiety X At-Party Expectancies interaction term ($r$ = .167, $p$ < .01). BAC was not significantly correlated with At-Party Expectancies ($r$ = .084, $p$ > .05).

To further explore the moderational relationship between At-Party Anxiety and At-Party Expectancies, a moderated multiple regression was performed on the dependent measure BAC. For the first step, At-Party Anxiety and At-Party Expectancies were entered into the equation. The At-Party Anxiety X At-Party expectancies interaction term was entered as the second step, but contributed no unique variance and was excluded from the model, $t(297) = .678$, $p > .10$.

The relationship between the number of drinks front-loaded and self-reported levels of social anxiety was also examined. A significant positive correlation was found between Front-Loading and At-Party Anxiety ($r = .168$, $p < .01$). That is, the higher participants' reported levels of social anxiety, the more drinks they consumed before arriving at fraternity parties.

## Discussion

Results from Study 1 only provided weak evidence supporting the association between anxiety and alcohol consumption, while Study 2 failed to support any of the five experimental hypotheses. Dispositional social anxiety was not a significant predictor of variance in either BAC or front-loading. Similarly, the proposed moderational relationships between dispositional social anxiety, alcohol expectancies, and drink-refusal self-efficacy were not found.

Overall, the results of Studies 1 and 2 provide only minimal support for the hypothesized relationship between social anxiety and alcohol consumption, with BAC being weakly correlated with at-party assessments of social anxiety. However, no relation was found between BAC and the IAS, the main dependent measure of social anxiety. It is important to note that methodological concerns addressed below suggest caution should be used in interpreting even these weak associations.

The previous literature examining this relationship is mixed and at times ambiguous. While some studies support a positive relationship between social anxiety and alcohol

consumption (Kidorf & Lang, 1999) and problem drinking (Lewis & O'Neill, 2000), others report either an inverse relationship or no relationship at all (Ham & Hope, 2005). In fact, Gilles, Turk, and Fresco (2005) provided evidence supporting both sides of this issue. They found social anxiety to be correlated with, and a significant predictor of, self-reported alcohol dependence and problems caused by alcohol use, but not to be correlated with the amount and frequency of alcohol consumption.

Similarly, the literature on the moderating effects of alcohol expectancies and drink-refusal self-efficacy on alcohol consumption provides varied results. Gilles, Turk, and Fresco (2005) supported a three-way interaction between social anxiety, alcohol expectancies, and drink-refusal self-efficacy. That is, college students with high social anxiety, low drink-refusal self-efficacy, and positive alcohol expectancies reported greater amount and frequency of alcohol consumption than other socially anxious participants. Though this is the only study to examine all three constructs at once, other studies have examined portions of parts of this model.

With regard to alcohol expectancies and drink-refusal self-efficacy, Lee and Oei (1993) and Oei and Burrow (2000) found alcohol expectancies and drink-refusal self-efficacy to relate to alcohol consumption, though the latter suggested alcohol expectancies had an indirect influence over alcohol consumption via its association with drink-refusal self-efficacy. Research on the moderating effects of alcohol expectancies and social anxiety on alcohol consumption is more in line with the findings from Study 2, providing little or no support for this relationship (Eggleston, Woolaway-Bickel, & Schmidt, 2004; Ham & Hope, 2005)

One possible explanation for the failure of the current research to support the experimental hypotheses deals with the assessment of the dependent variables investigated in these studies. Specifically the difference between state and trait measures could be important

here. For example, state anxiety is considered a transitory emotional response to a stressful situation, while trait anxiety is regarded as a personality characteristic independent of environmental conditions (Kennedy, Schwab, Morris, & Beldia, 2001). The same is true when you are talking about social anxiety.

The IAS was developed as a measure of dispositional, or trait, social anxiety, assessing a participant's general feelings of anxiety, independent of the situational context. Conversely, At-Party Anxiety, though developed to assess trait social anxiety, was likely measuring state, or situational, social anxiety. If At-Party Anxiety were a measure of trait social anxiety, one would hypothesize it would significantly correlate with the IAS, a reliable measure of this construct. This was not the case. Because the At-Party Anxiety item was assessed *in vivo*, participants reactions probably reflected their feelings of state social anxiety in that particular environment (a fraternity party), or even at that particular moment (i.e., feelings of social anxiety while speaking with the RA administering the APQ). Similarly, assessing a partygoer's BAC is an example of a state measure. It is a physiological measure reflecting a participant's alcohol consumption at a specific time and in a very specific environment. Any number of variables could effect the amount of alcohol consumed at a fraternity party, including factors from overall mood to environmental or peer influences.

This could explain why BAC correlated significantly with At-Party Anxiety but not with IAS scores. Situational measures of individual characteristics are more likely to predict behaviors in that specific situation. Specifically, items assessing situational social anxiety at fraternity parties are likely to predict social anxiety-associated behaviors (i.e., alcohol consumption and front-loading) within those parties. Taken together, fraternity parties represent a specific type of event where alcohol consumption occurs within the college community.

However, not all fraternity parties are alike. Each party may create or represent different social pressures for different individuals. For example, a partygoer may be attending a party with the intent of asking someone out on a date (high social anxiety situation), while at another they are simply interested in hanging out with their friends (low social anxiety situation). Therefore, some fraternity parties may be more social-anxiety producing and lead to increases in front-loading and overall alcohol consumption, while other parties with different situational factors may not.

Along these lines, environmental or contextual factors may also help to explain the findings of the current research. That is, there may be environmental cues that overpower the influence of other dependent variables (i.e., positive alcohol expectancies and self-efficacy). For example, heightened social anxiety may actually lead to decreased alcohol consumption for some participants, a suppressive effect suggested by several researchers (Bruch, Heimberg, Harvey, McCann, Mahone, & Slavkin, 1992; Bruch, Rivet, Heimberg, & Levin, 1997; Eggleston, Woolaway-Bickel, & Schmidt, 2004). That is, self-presentation concerns, or concerns about how one will act while under the influence of alcohol, can suppress or counteract the influence of other variables which increase alcohol use, such as positive alcohol expectancies and low drink-refusal self-efficacy. In this sense, social anxiety can actually act as a protective factor against alcohol abuse rather than a risk factor. Yet others may describe this in terms of the avoidance response (i.e., negative alcohol expectancies) overpowering approach responses (i.e., positive alcohol expectancies).

Another explanation for the current research findings addresses specifically the fraternity party environment in which data were collected. For the most part, this is a setting in which many partygoers are consuming large quantities of alcohol for any number of reasons, many of which could be completely independent of social anxiety levels. For example, fraternity parties

may be seen as a situation in which consuming large quantities of alcohol is not only accepted but encouraged, a sort of "Animal House" mentality. Support for this comes from research finding college students to become more intoxicated at fraternity parties than at private (apartment) parties (Glindemann & Geller, 2003). As such, it would be difficult to tease out the effects of social anxiety.

There are several limitations to Study 2 that warrant some attention. First, there is the issue of overall sample size. For all hypothesis-related analyses, the sample consisted of only 86 participants, due primarily to a large attrition rate. A full 71% of the original sample of 301 participants (without the 18 participants excluded because of multiple assessments) were discarded because their at-party data (from the APQ) could not be accurately matched to post-party measures (from the PPQ). Several implications can be drawn from this. First, a small sample size would make finding significant results difficult when examining complex moderational relationships, such as predicted by Hypothesis 4. However, because even simple hypothesized relationships were not found in these studies, this may not be as critical an issue.

More important are the implications for the data collection methodology, specifically matching APQs administered at fraternity parties with PPQs administered at a later date. One implication is that the six-character anonymous participant code used in matching these measures is not as effective as would be desired. On the participant side of the coin, partygoers who are intoxicated may not be able to accurately generate their code or they may simply make it up on the spot. On the research assistant side, because of noise or other possible distractions, the participant code may be written down incorrectly on the data sheet. Any of these instances would lead to data which could not be matched and therefore discarded from primary analyses.

Another implication is some participants did not complete the PPQ for any number of reasons. For example, participants could have a) forgotten to fill out the PPQ, b) lost the reminder card containing the PPQ's web address, or c) actively chosen not to complete it. Though they were offered the chance to be entered into a raffle for $250, this may not have been a strong enough incentive for some to complete all measures.

Related to this, sampling bias is always a concern in this type of research. There may be something about the participants who agree to participate in this type of research that distinguishes them from those partygoers who do not participate. From the attrition analysis, there is a possible gender-based selection bias. That is, women were more likely to complete the online PPQ a few days after a party. Another explanation could be that women were more likely than men to accurately and consistently report their participant code on the APQ and PPQ. Likely, it was a combination of both of these. These are interesting issues that warrant further investigation in future naturalistic research of alcohol consumption.

Another limitation was the difficulty with one of the dependent measures. Specifically, the complete version of the SCQ-39M was not made available to all participants due to an error in the programming of the online PPQ. Only 39.5% of the sample actually received the full 26-item version of this measure, while the majority of the sample received an abbreviated version consisting of only the first 15 items. As mentioned above, a paired-samples t-test revealed the average scores of two versions to be significantly different from each other. Because no validity or reliability checks were performed on this partial measure, results pertaining to PSCQ should be interpreted with extreme caution. It is highly likely the PSCQ was not a valid measure of drink-refusal self-efficacy.

Finally, there is a limitation in collecting data from intoxicated individuals. This is more of an issue with *in vivo* data collection than for post-party measure completion, at least presumably. With regards to the current studies, at-party measures of anxiety and expectancies may possibly be affected by participant intoxication levels. In fact, the effects of alcohol may have altered the responses of individuals in hypothesized ways. That is, a partygoer may report feeling low levels of anxiety. However, if they had been drinking before administration of the questionnaire (which is the case for most participants), they may already be experiencing any ameliorative effects alcohol may have. Thus, even though alcohol may be used to reduce anxiety, in this case the current field research could not discern this effect.

This discussion leads to interesting directions for future research at fraternity parties, as well as other naturalistic settings. It would be interesting to measure the change in social anxiety over time as it relates to changes in intoxication level. For example, participants could be administered a short questionnaire upon entering a party to assess feelings of social anxiety. At that time, they could also be given a breath test to determine BAC. Upon leaving the party, they could again have their social anxiety level assessed and receive a breathalyzer test. Assuming the initial self-medicating hypotheses of this research, an inverse relationship could be predicted. That is, as more alcohol is consumed (or as BAC increases), self-reported levels of social anxiety would decrease. Though other limitations from the current research would also need to be addressed (i.e., matching difficulties), this approach could provide some very interesting findings and contribute to the current literature addressing relations between social anxiety and alcohol use.

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Table 1

*Summary Statistics for Study 1 Data Analysis (n = 905)*

|  | Mean | Standard Deviation |
|---|---|---|
| BAC | .097 | .060 |
| Anxiety Before | .52 | .85 |
| Anxiety Now | .56 | .88 |
| Total Anxiety | 1.08 | 1.58 |

Table 2

*Study 2 Independent Measures and Associated Subscales*

| Measure | Subscales |
|---|---|
| Interaction Anxiousness Scale (IAS)<br>Leary, 1983, 1993 | None |
| Alcohol Expectancy Questionnaire (AEQ)<br>Brown, Christiansen, & Goldman, 1987 | AEQ Social Assertiveness (AEQA) |
| *The Alcohol Expectancy Questionnaire-Original Scoring (AEQO) consists of the same subscales | AEQ Relaxation/Tension Reduction (AEQTen) |
| Situational Confidence Questionnaire (SCQ-39M)<br>Annis & Graham, 1988;<br>Burke & Stephens, 1997 | SCQ Positive Affective States |
| | SCQ Negative Affective States |
| | Partial SCQ (PSCQ) |
| | SCQ Social Anxiety |
| | SCQ Alternative Anxiety |

Table 3

*Summary Statistics for Primary Data Analysis*

| Complete Sample | N | Mean | Range | Standard Deviation |
|---|---|---|---|---|
| Age | 86 | 19.49 | 17-22 | 1.17 |
| BAC | 86 | .103 | .000-.254 | .062 |
| Tot Drinks Front-Loaded | 86 | 2.61 | 0-12 | 2.9 |
| Tot Drinks At Party | 86 | 4.35 | 0-15 | 3.11 |
| At-Party Anxiety | 86 | 2.44 | 1-6 | 1.39 |
| At-Party Expectancies | 86 | 3.42 | 1-6 | 1.66 |
| IAS Total Score | 86 | 36.48 | 19-59 | 8.18 |
| AEQ Total Score | 86 | 83.78 | 20-120 | 20.37 |
| AEQA Total Score | 86 | 47.56 | 11-66 | 12.26 |
| AEQTen Total Score | 86 | 36.20 | 9-54 | 9.72 |
| AEQO Total Score | 86 | 34.85 | 17-40 | 5.40 |
| AEQOA Total Score | 86 | 19.70 | 10-22 | 3.11 |
| AEQOTen Total Score | 86 | 15.15 | 6-18 | 2.87 |
| PSCQ Total Score | 86 | 56.20 | 15-90 | 18.25 |
| | | | | |
| **Partial Sample** | | | | |
| SCQ Total Score | 34 | 106.02 | 29-182 | 37.78 |
| SCQNeg Total Score | 34 | 40.06 | 10-60 | 14.36 |
| SCQPos Total Score | 34 | 32.14 | 10-60 | 15.54 |
| SCQSA Total Score | 34 | 21.18 | 6-36 | 8.47 |
| SCQAA Total Score | 34 | 33.23 | 9-54 | 12.45 |

Table 4

*Relevant Correlations for Primary Data Analysis (n = 86[†])*

| | Gend | Greek | BAC | FL | AP Drinks | AP Anx | AP Exp | A X E | IAS | AEQ | SCQ | PSCQ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gend | 1 | | | | | | | | | | | |
| Greek | .230* | 1 | | | | | | | | | | |
| BAC | .142 | .259* | 1 | | | | | | | | | |
| FL | -.041 | -.006 | .336** | 1 | | | | | | | | |
| AP Drinks | .480** | .238* | .348** | -.163 | 1 | | | | | | | |
| AP Anx | .273* | .000 | .234* | .006 | .105 | 1 | | | | | | |
| AP Exp | .005 | .041 | .176 | .194 | .169 | .094 | 1 | | | | | |
| A X E | .154 | .012 | .288** | .043 | .145 | .682** | .691** | 1 | | | | |
| IAS | -.134 | -.206 | -.013 | -.119 | .015 | .124 | -.006 | .096 | 1 | | | |
| AEQ | -.091 | .039 | .076 | .203 | -.211 | -.050 | .210 | .112 | .066 | 1 | | |
| SCQ[†] | .139 | -.119 | -.223 | -.179 | -.183 | .133 | -.306 | -.117 | -.151 | -.003 | 1 | |
| PSCQ | -.028 | -.210 | -.169 | -.073 | -.057 | .001 | -.148 | -.089 | -.014 | -.100 | .911** | 1 |

\* significant at the .05 level
\*\* significant at the .01 level
[†] *All correlations involving the SCQ Total Score (SCQ) use n = 34*

*Gend = Gender, Greek = Greek Status, BAC = Blood Alcohol Concentration, FL = Front-loading, AP Drinks = Drinks, AP Anx = At-Party Anxiety, AP Exp = At-Party Expectancies, A X E = At-Party Anxiety X At-Party Expectancies, IAS = IAS Total Score, AEQ = AEQ Total Score, SCQ = SCQ Total Score, PSCQ = Partial SCQ Total Score*

Table 5

*Regression Results for Primary Data Analysis*

| Predictor | β | SE | $R^2$ | $R_{adj}^2$ | $\Delta R^2$ |
|---|---|---|---|---|---|
| **Dependent Variable: BAC** | | | | | |
| *Hypothesis 1* | | | | | |
| IAS Total Score | -.013 | .001 | .000 | -.012 | - |
| *Hypothesis 2* | | | | | |
| Step 1 | | | .006 | -.018 | .006 |
|    IAS Total Score | -.018 | .001 | | | |
|    AEQ Total Score | .077 | .000 | | | |
| Step 2 | | | .006 | -.030 | .000 |
|    IAS X AEQ | .086 | .000 | | | |
| *Hypothesis 3 (partial sample)* | | | | | |
| Step 1 | | | .071 | .011 | .071 |
|    IAS Total Score | .145 | .001 | | | |
|    SCQ-39M Total Score | -.202 | .000 | | | |
| Step 2 | | | .088 | -.003 | .018 |
|    IAS X SCQ-39M | .607 | .000 | | | |
| *Hypothesis 3 (full sample)* | | | | | |
| Step 1 | | | .029 | .005 | .029 |
|    IAS Total Score | -.016 | .001 | | | |
|    PSCQ Total Score | -.169 | .000 | | | |
| Step 2 | | | .029 | -.007 | .000 |
|    IAS X PSCQ | .050 | .000 | | | |
| *Hypothesis 4 (partial sample)* | | | | | |
| Step 1 | | | .074 | -.019 | .074 |
|    IAS Total Score | .145 | .001 | | | |
|    AEQ Total Score | .058 | .001 | | | |
|    SCQ-39M Total Score | -.201 | .000 | | | |
| Step 2 | | | .096 | -.029 | .022 |
|    IAS X AEQ X SCQ | .524 | .000 | | | |
| *Hypothesis 4 (full sample)* | | | | | |
| Step 1 | | | .032 | -.003 | .032 |
|    IAS Total Score | -.020 | .001 | | | |
|    AEQ Total Score | .061 | .000 | | | |
|    PSCQ Total Score | -.163 | .000 | | | |
| Step 2 | | | .043 | -.004 | .011 |
|    IAS X AEQ X PSCQ | .354 | .000 | | | |
| **Dependent Variable: Total Drinks Front-Loaded** | | | | | |
| *Hypothesis 5* | | | | | |
| IAS Total Score | -.119 | .038 | .014 | .002 | - |

Table 6

*Summary Statistics for Total Sample Data Analysis (n = 301)*

|  | **Mean** | **Range** | **Standard Deviation** |
|---|---|---|---|
| BAC | .101 | .000-.254 | .058 |
| Tot Drinks Front-Loaded | 3.4 | 0-24 | 4.0 |
| Tot Drinks At Party | 4.4 | 0-24 | 3.5 |
| At-Party Anxiety | 2.42 | 1-6 | 1.40 |
| At-Party Expectancies | 3.24 | 1-6 | 1.62 |

Table 7

*Relevant Correlations for Total Sample Data Analysis (n = 301)*

|  | Gend | Greek | BAC | FL | AP Drinks | AP Anx | AP Exp | A X E |
|---|---|---|---|---|---|---|---|---|
| Gend | 1 | | | | | | | |
| Greek | .153** | 1 | | | | | | |
| BAC | .013 | .095 | 1 | | | | | |
| FL | .065 | -.037 | .313** | 1 | | | | |
| AP Drinks | .181** | .126* | .352** | -.033 | 1 | | | |
| AP Anx | .113* | -.111 | .167** | .168** | .116* | 1 | | |
| AP Exp | -.004 | .005 | .084 | .063 | .062 | .254** | 1 | |
| A X E | .050 | -.078 | .167** | .161** | .109 | .789** | .696** | 1 |

\* significant at the .05 level

\*\* significant at the .01 level

*Gend = Gender, Greek = Greek Status, BAC = Blood Alcohol Concentration, FL = Front-loading, AP Drinks = Drinks, AP Anx = At-Party Anxiety, AP Exp = At-Party Expectancies, A X E = At-Party Anxiety X At-Party Expectancies*
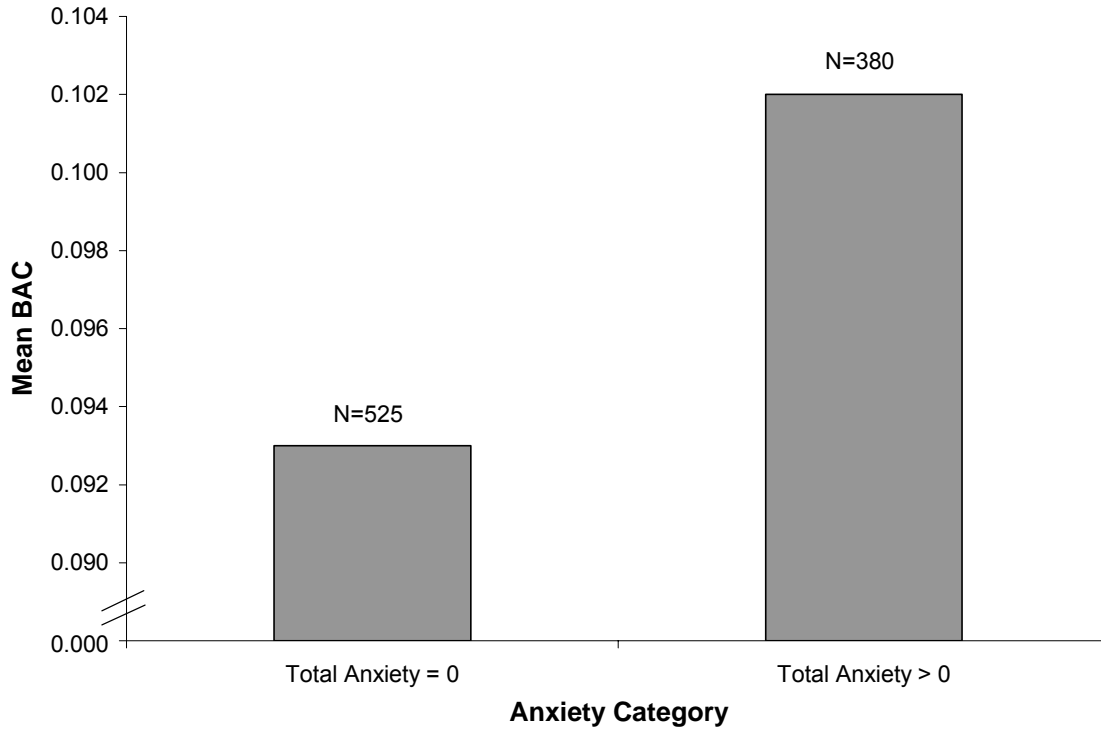
Table 8

*Regression Results for Total Sample Data Analysis*

| Predictor | β | SE | $R^2$ | $R_{adj}^2$ | $\Delta R^2$ |
|---|---|---|---|---|---|
| **Dependent Variable: BAC** | | | | | |
| Step 1 | | | .030 | .023 | .030 |
| At-Party Anxiety | .006 | .002 | | | |
| At-Party Expectancies | .002 | .002 | | | |
| Step 2 | | | .031 | .021 | .002 |
| AP Anx X AP Exp | .001 | .001 | | | |

Figures

*Figure 1:* Mean BAC as a Function of Anxiety Category

*Figure 1:* Mean BAC as a Function of Anxiety Category

Appendix A:

Questionnaires

## At-Party Questionnaire

| Costu__? | Se__ace? | | Party: | Date: | Time: | ▭ |
|---|---|---|---|---|---|---|
| **Yes** | | | | | | |
| **No** | | | | | | |

What are the first two letters of the city in which you were born?

What are the first two letters of your mother's maiden name?

What is the number of the month in which you were born?

Class: Fr So Ju Se Gr Ns    Year Ent: ____    HH    MM

Gender:  M   F    Time arrived at party: ____ ____

**1 DRINK =**
**12 oz. Beer • 1 Shot - 80 Proof Liquor**
**4 oz. Wine • 9 oz. Wine Cooler**

-- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

| | |
|---|---|
| How many drinks did you consume **before** coming to tonight's party? ⬆ | drnk |
| How many alcoholic drinks have you consumed **at** tonight's party? | drnk |
| How much food have you consumed **at** tonight's party? (show scale) | |
| How many non-alcoholic drinks (12 oz. serving) have you consumed **at** tonight's party? | drnk |
| How much time have you spent dancing **at** tonight's party? | min |
| How much time have you spent watching TV **at** tonight's party? | min |
| How much time have you spent playing non-drinking games **at** tonight's party? | min |

Have you done any of the following at tonight's party:

**ONE DRINK =**
  **12 oz. Beer**
  **1 Shot - 80 Proof Liquor**
  **4 oz. Wine**
  **9 oz. Wine Cooler**

| | | | | |
|---|---|---|---|---|
| Played drinking games? | N | Y | How long: | min |
| ⬅ Chugged, beer bonged, or shotgunned drinks? | N | Y | How many: | drnk |
| Taken shots of liquor? | N | Y | How many: | shots |

Do you belong to a Greek organization?
**If No** see email list instructions

| N | Y | **If Yes**, which organization:. |
|---|---|---|

On a scale of 1 to 6 (1=none, 6=severe), how anxious do you usually feel in social situations such as this one?
(clarify: a fraternity party) **(show scale on back)**

On a scale of 1 to 6 (1=none, 6=completely), how much do you believe alcohol helps to reduce this anxiety?
**(show scale on back)**

Referring to this scale (on back), estimate your current level of intoxication:
You can pick **any** number, not just those provided on the scale.

| How would you say our presence at this party affected the amount of alcohol you consumed? | ☐ Our presence had no effect on your drinking. | ☐ You drank more than you normally would. | ☐ You drank less than you normally would. | **BAC:** Retest? |
|---|---|---|---|---|

**Post-Party Questionnaire**

First <u>two</u> letters of the city in which you were born:  ————

First <u>two</u> letters of your mother's maiden name:  ————

Number of the month in which you were born:  ————

Gender:   M   F

Ethnicity:  __ Hispanic or Latino                __ Not Hispanic or Latino

Race (check all that apply:  __ American Indian or Alaskan Native
  __ Black or African American
  __ Asian
  __ White
  __ Native Hawaiian or Pacific Islander

Did you attend the party this weekend where we collected BAC data?   Yes   No

Did you receive a BAC assessment at the party?   Yes   No

If **Yes**, what was your BAC (if you don't remember, please give your best estimate):  ——

— — — — — — — — — — — — —

1. On how many occasions over the last <u>two weeks</u> did you consume five or more drinks at a sitting? (a drink is a 12 oz. beer, a 4 oz. glass of wine, or 1 shot of 80 proof liquor) (0–14).  ——

2. In the last <u>4 weeks</u>, what was the *average* number of times, you consumed alcohol <u>each week</u>? (0-7)  ——

3. In the last <u>4 weeks</u>, what was the *average* number of drinks you consumed <u>on each drinking occasion</u>?  ——

4. In the last <u>4 weeks</u>, on how many days did you chugged or funneled drinks? (0-28)  ——

5. In the last <u>4 weeks</u>, on how many days were you intoxicated? (0-28)  ——

6. In the last <u>4 weeks</u>, on how many days did you play drinking games? (0-28)  ——

7. In the last <u>4 weeks</u>, on how many days did you drink quickly to feel the effects of alcohol? (0-28)  ——

— — — — — — — — — — — — —

8. Your AGE: _____

9. Indicate the number of alcoholic drinks you consumed at the party. _____
   (1 drink = 12 oz. beer, 4 oz. glass of wine, 1 shot of 80 proof liquor, or 9 oz. wine cooler)

10. Indicate the number of **non-alcoholic drinks** you consumed at the party. _____
    (1 drink = 12 oz. of water. soda, juice, or other non-alcoholic beverage)

**To what extent did each of the following occur at the party?**

|  | Not At All | | | | A Lot |
|---|---|---|---|---|---|
| 11. I was pressured to consume alcohol. | 1 | 2 | 3 | 4 | 5 |
| 12. I was given alcoholic beverages I did not ask for. | 1 | 2 | 3 | 4 | 5 |
| 13. I was encouraged to stop drinking. | 1 | 2 | 3 | 4 | 5 |
| 14. I consumed alcoholic beverages I did not really want to drink. | 1 | 2 | 3 | 4 | 5 |
| 15. I was encouraged to have some food. | 1 | 2 | 3 | 4 | 5 |
| 16. I was encouraged to drink quickly. | 1 | 2 | 3 | 4 | 5 |
| 17. I was encouraged to have a non-alcoholic beverage. | 1 | 2 | 3 | 4 | 5 |

— — — — — — — — — — — — — — — — —
— — —

**For Questions 18 and 19, please answer using the following responses:**
**1=none**
**2=slightly**
**3=mildly**
**4=moderately**
**5=considerably**
**6=completely**

18. How anxious do you usually feel in social situations (i.e., a fraternity party)? _____

19. To what extent do you believe alcohol helps to reduce this anxiety? _____

20 On a scale from 1 to 10, how much fun did you have at the party? _____
   (0 = no fun; 10 = maximum fun)

— — — — — — — — — — — — — — — —

**Party-Related Experiences:**

The following are feelings or behaviors experienced by some people at parties. *Read each item, and indicate the degree to which you agree or disagree with each statement concerning the party.*

| | Strongly Disagree | | Neutral | | Agree |
|---|---|---|---|---|---|
| 21. I was social. | 1 | 2 | 3 | 4 | 5 |
| 22. I had a great time. | 1 | 2 | 3 | 4 | 5 |
| 23. I found it very easy to talk with new acquaintances. | 1 | 2 | 3 | 4 | 5 |
| 24. I felt a very strong connection with friends. | 1 | 2 | 3 | 4 | 5 |
| 25. I was very socially skilled. | 1 | 2 | 3 | 4 | 5 |
| 26. I was socially confident. | 1 | 2 | 3 | 4 | 5 |

The following items are alcohol-related experiences that some people report because of consuming alcohol. Read each item, and then *indicate which of the following you experienced as a result of consuming alcohol at the party.*

| | | |
|---|---|---|
| 27. I had a hangover. | Yes | No |
| 28. I vomited. | Yes | No |
| 29. I did something I now regret. | Yes | No |
| 30. I had a memory loss (blackout) concerning part of the evening. | Yes | No |
| 31. I damaged property or got into other mischief. | Yes | No |
| 32. I got in an argument or fight. | Yes | No |
| 33. I got hurt or injured. | Yes | No |
| 34. I drove a car under the influence of alcohol. | Yes | No |
| 35. I got a ride from someone who was under the influence of alcohol. | Yes | No |

36. Did you use any of the following methods to moderate your alcohol consumption and/or level of intoxication (check all that apply)?

__ Choose not to drink alcohol.

__ Limit my alcohol consumption.

__ Ate food before I consumed alcohol.

__ Ate food while I was drinking alcohol.

__ Monitored the number of alcoholic beverages I had.

__ Avoided rapid consumption of alcohol.

__ Had a strategy to reduce my alcohol consumption and/or intoxication.

\_\_ Got social support for keeping my intoxication down.

\_\_ Supported the low-risk choices of others.

\_\_ Consumed non-alcoholic beverages between alcoholic drinks

\_\_ Avoided situations and people which cause me to drink more alcohol than I planned.

\_\_ Other (please explain):

37. Overall, which of the following statements best captures the party?

| | | | | | |
|---|---|---|---|---|---|
| Most people were not wasted | 1 | 2 3 | 4 | 5 | Most people were wasted. |
| I needed to drink to fit in | 1 | 2 3 | 4 | 5 | I did not need to drink to fit in |
| I was really into the party | 1 | 2 3 | 4 | 5 | I was not really into in party |
| The party environment made me want to drink | 1 | 2 3 | 4 | 5 | The party environment had no effect on my drinking |

**The Day After:** Read each of the following activities and *indicate which ones you did the day after the party*.

| | Strongly Disagree | | Neutral | | Strongly Agree |
|---|---|---|---|---|---|
| 38. I made all my scheduled appointments on time. | 1 | 2 | 3 | 4 | 5 |
| 39. I did not complete all homework that needed to be done. | 1 | 2 | 3 | 4 | 5 |
| 40. I completed all of the housework I intended to do (i.e., cleaning, laundry). | 1 | 2 | 3 | 4 | 5 |
| 41. I woke up feeling bad. | 1 | 2 | 3 | 4 | 5 |
| 42. I missed out on a fun activity | 1 | 2 | 3 | 4 | 5 |

Appendix B:

Curriculum Vita

<div align="center">

CURRICULUM VITAE

# IAN JAMES EHRHART, M.S.
iehrhart@vt.edu

REVISED:
MARCH 2006

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## EDUCATION

**August 2003 – Present**

*Virginia Polytechnic Institute and State University – Blacksburg, VA*
*Concentration: Clinical Psychology*
Thesis: *Alcohol Expectancies and Self-Efficacy as Moderators of Social Anxiety and Alcohol Use Among College Students*
        Proposed: 12/10/04
        Defended: 11/05
*QCA: 3.92*

**August 1996 – May 2001**

*Virginia Polytechnic Institute and State University – Blacksburg, VA*

| Degrees: | B.S., Psychology | cum laude |
| --- | --- | --- |
|  | B.S., Biology | cum laude |
| QCA: 3.57 | Psychology: | 3.84 |
|  | Biology: | 3.47 |
|  | Last 72 hours: | 3.65 |

PUBLICATIONS

Glindemann, K. E., **Ehrhart, I. J.**, Drake, E. A., & Geller, E. S. (in press).  Reducing excessive alcohol consumption at university fraternity parties: A cost-effective incentive/reward intervention. *Addictive Behaviors*.  Submitted 8/05.

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Lea, B. N., **Ehrhart, I. J.**, Roberts, B. G., & Taggi, A. J. (2001, May). *Do Fraternity Parties Live up to Their Reputation?: A Systematic Comparison of Fraternity vs. Private Parties.* Paper presented at the 27th annual convention of the Association for Behavior Analysis, New Orleans, LA.

Mottershead, Z., Roberts, B. G., **Ehrhart, I. J.**, & Glindemann, K. E. (2001, May). *Impact of an "Ice Luge" on Alcohol Use and Abuse.* Paper presented at the 27th annual convention of the Association for Behavior Analysis, New Orleans, LA.

Glindemann, K. E., **Ehrhart, I. J.**, Neal, J., & Timko, L. (2000, April). *Fraternity Date Parties: An Examination of Companionship Effects on Levels of Intoxication.* Presented at the semi-annual meeting of the Virginia Psychological Association, Tyson's Corner, VA.

PROFESSIONAL POSTER PRESENTATION

Rhodes, P. A., Cunningham, T. R., & **Ehrhart, I. J.** (2005, December). *Developing a Methodology to Study Behaviors Contributing to Medication Errors.* Poster presented at the 8th annual meeting of the Maryland Association for Behavior Analysis, Baltimore, MD.

Lehman, P. K., **Ehrhart, I. J.**, Fournier, A. K., & Hirota, T. (2005, May). *"Pick of the Litter": Quantifying an Environmentally Harmful Behavior.* Poster presented at the 31st Annual Convention of the Association for Behavior Analysis, Chicago, IL.

Ball, D. L., Williamson, K. A., Mistler, S. A., & **Ehrhart, I. J.** (2005, March). *Exploring the Epidemiology of College Student Alcohol Consumption at Fraternity Parties: A Comparison of Two Universities.* Poster presented at the 1st annual meeting of the Virginia Association for Behavior Analysis, Harrisonburg, VA.

Cox, M. G., Rhodes, P. A., Howard, H., **Ehrhart, I. J.**, & Glindemann, K. E. (2004, December). *An Assessment of Environmental Differences Between Fraternity Parties and Private Parties.* Poster presented at the 7th annual meeting of the Maryland Association for Behavior Analysis, Baltimore, MD.

Lehman, P. K., Fournier, A. K., **Ehrhart, I. J.**, & Hirota, T. (2003, October). *Who Trashed Our River?: A Content Analysis of Shoreline Litter on the New River.* Poster presented at the semi-annual meeting of the Virginia Psychological Association, Charlottesville, VA.

**Ehrhart, I. J.**, Petersen, M. D., Brooks, K. C., & Glindemann, K. E. (2003, May). *Taking a Shot for Courage: Social Anxiety and Students' Levels of Alcohol Intoxication.* Poster presented at the 29th annual convention of the Association for Behavior Analysis, San Francisco, CA.

**Ehrhart, I. J.**, Stuart, M. L., Bensenhaver, S. L., & Glindemann, K. E.  (2001, April). *Investigating Front-Loading of Intoxication at Fraternity Parties.*  Poster presented at the semi-annual meeting of the Virginia Psychological Association, Roanoke, VA.

Stuart, M. L., **Ehrhart, I. J.**, Lea, B. N., & Peterson, M. D.  (2001, April).  *Investigating Front-Loading of Intoxication by Students in Bar Settings.*  Poster presented at the semi-annual meeting of the Virginia Psychological Association, Roanoke, VA.

**Ehrhart, I. J.**, Glindemann, K. E., Buscemi, N. V., & Stuart, M. (2000, November).  *Assessing the Impact of Drinking Location on Students' Levels of Intoxication.*  Poster presented at the semi-annual meeting of the Virginia Psychological Association, Williamsburg, VA.

## GRANT ASSISTANCE EXPERIENCE

2005
*Exploring interventions to increase hospital-wide use of CPOE*
Agency for Healthcare Research and Quality, Rockville, MD
Principal Investigator:  E. Scott Geller, Ph.D.
$99,999 for one year

2003-2005
*Environmental Factors Affecting College Party Drinking*
National Institute for Alcohol Abuse and Alcoholism, Bethesda, MD
Principal Investigator:  E. Scott Geller, Ph.D.
$580,087 for two years

2002-2004
*An Incentive Approach to Reduce Alcohol Abuse at Parties*
National Institute for Alcohol Abuse and Alcoholism, Bethesda, MD
Principal Investigator:  E. Scott Geller, Ph.D.
$538,653 for two years

2001-2003
*Testing a Communication System for Reducing Road Rage*
Small Business Innovative Research, Bethesda, MD
Principal Investigator:  E. Scott Geller, Ph.D.
$99,999 for one year

## PROFESSIONAL EXPERIENCE

*August 2005 – Present*
Assistant Director, Psychological Services Center and Adult Assessment Clinic
Virginia Tech Department of Psychology, Blacksburg, VA
Director/Supervisor: Lee D. Cooper, Ph.D., LCP
Responsibilities:
- Coordinate three other Graduate Assistants in attending to the needs of the Psychological Services Center.  Tasks include conducting practicum student chart reviews, acting as

liaisons to practicum supervision teams, and basic operational needs (i.e., troubleshooting computer and A/V equipment, clearing unused equipment/furniture from the premises).

- Created descriptive floor plan of the PSC
- Created the 2004-2005 Demographic Data Annual Report of clients seen at the PSC
- Created computerized version of the Student Practicum Evaluation
- Acted as Financial Reconciler for monthly PSC financial reports and quarterly aging reports.
- Conduct at least four full assessments for ADHD and LD per semester.

*August 2005 – Present*
Graduate Clinician, Cook Counseling Center (Clinical Externship)
Virginia Tech Division of Student Affairs, Blacksburg, VA
Director: Robert C. Miller, Ed.D.
Supervisor(s): Cathye Griffen Betzel, Psy.D., LCP, Training Director
　　　　　　　Tevya M. Zukor, Ph.D., Post-Doctoral Resident
　　　　　　　Ghena Ismail, Clinical Psychology Intern
Responsibilities:
- Attend clinical externship 10 hours per week
- Maintain a caseload of 4-5 clients per week and complete all necessary paperwork in a timely manner.
- Weekly supervision with direct supervisor (G. Ismail) for one hour
- Weekly group supervision with other practicum students with C. Betzel and T. Zukor for two hours.
- Complete case conceptualizations when requested by supervisors.

*August 2003 – Spring 2005*
Graduate Clinician, Psychological Services Center
Virginia Tech Department of Psychology, Blacksburg, VA
Director: Lee D. Cooper, Ph.D., LCP
Responsibilities:
- Maintaining a caseload of 10-36 client contact hours per semester for individual, couple, and anger management therapy.
- Psychological assessment, including administration, scoring, report writing, and debriefing of adult clients.
- Receiving group supervision, including participation on practicum teams and individual supervision.
- Documenting therapy progress with case notes, intake reports, and discharge reports.

*August 2003 – Present*
Graduate Research Assistant, Center for Applied Behavior Systems
Virginia Tech Department of Psychology, Blacksburg, VA
Director: E. Scott Geller, Ph.D.
Responsibilities:
- Designing research interventions to increase safe, healthy, and/or environmentally beneficial behaviors in community and industrial settings.

- Developing questionnaires, surveys, and checklists for psychological research.
- Developing research protocols.
- Organizing data collection, entry, and verification.
- Database management and data analysis.
- Supervising undergraduate research assistants in both field and laboratory settings.
- Mentoring undergraduate research assistants.
- Presenting research findings at professional conferences.
- Supervising undergraduate students enrolled in independent study.
- Preparing manuscripts.
- Preparing grant proposals.
- Leading a project to study and prepare interventions related to safety concerns in hospitals.

*July 2001 – July 2003*
Center Coordinator, Center for Applied Behavior Systems
Virginia Tech Department of Psychology, Blacksburg, VA
Director: E. Scott Geller, Ph.D.
Responsibilities:
- Designing research interventions to increase safe, healthy, and/or environmentally beneficial behaviors in community and industrial settings.
- Developing questionnaires, surveys, and checklists for psychological research.
- Developing research protocols.
- Organizing and supervising data collection, entry, and verification.
- Database management and data analysis.
- Supervising undergraduate research assistants in both field and laboratory settings.
- Presenting research findings at professional conferences.
- Preparing grant proposals.
- Co-managing a grant to study an intervehicular communication systems.
- Supervising undergraduate students enrolled in field study (tracking hourly requirements, overseeing data collection sign-up)
- Running and organizing weekly organizational meetings for graduate students and center research staff.
- Assisting the center director with manuscript preparation, email correspondence, personal schedule, and preparation of materials for both undergraduate and graduate classes.

*August 1999 – May 2001*
Undergraduate Research Assistant, Center for Applied Behavior Systems
Virginia Tech Department of Psychology, Blacksburg, VA
Director: E. Scott Geller, Ph.D.
Responsibilities:
- Data collection in many different field settings.
- Data entry, verification, and analysis.
- Presenting research findings at professional conferences.
- Attending weekly organizational meetings.

*Summer 2000 – Fall 2000*
Undergraduate Research Assistant, Infant Development Laboratory
Virginia Tech Department of Psychology, Blacksburg, VA
Supervisor: Jonathan Roberts, Ph.D.
Responsibilities:
- Monitoring EEG output during data collection.
- Preparing, cleaning, and maintaining EEQ equipment.

## AWARDS AND HONORS

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|---|---|
| *2004 – 2005* | Galper Fund Award for Professional Development ($100) |
| *2001, May* | Undergraduate Research Award in Psychology |
| *1996 – 2001* | Undergraduate Academic Dean's List:  8/10 semesters |

## PROFESSIONAL AFFILIATIONS AND ORGANIZATIONS

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|---|---|
| *2005 – present* | Organizational Behavior Management Network:  student member |
| *2003 – present* | Association for Behavior Analysis:  student member |
| *2001 – 2002* | Virginia Academy of Science:  member |
| *2000 – present* | Virginia Psychological Association:  student associate; member |
| *2000 – present* | Virginia Applied Psychology Academy:  student associate; member |
| *1998 – present* | Golden Key National Honors Society:  member |
| *1997 – present* | Phi Sigma National Biological Honors Society:  member |
| *1996 – 1997* | Alpha Epsilon Delta Pre-Med Honors Society:  member |

## RELATED COURSEWORK (GRADUATE)

| | |
|---|---|
| Clinical Practicum (Fall 2003 – Present) | Clinical Externship (Fall 2005-Spring 2006) |
| Theoretical Foundations of Child Development | Research Methods |
| Assessment of Human Intelligence | Biological Bases of Behavior |
| Personality Assessment | Behavior Mgmt. in Large Scale Systems |
| Personality Processes | Child Psychopathology |
| Psychopathology | Statistics for Social Science Research I & II |
| Psych Perspectives in Social Psychology | GTA Training Workshop |
| Child Development | |

## RELATED COURSEWORK (UNDERGRADUATE)

Psychology

| | |
|---|---|
| Introduction to Psychology | Industrial/Organizational Psychology |
| Psychology of Learning | Nervous Systems and Behavior |
| Personality Psychology | Principles of Psychological Research |
| Health Psychology | Social Psychology |
| Developmental Psychology | Advanced Social Psychology |
| Community Health | Social Psychology Lab |
| Field Study (3 semesters) | Undergraduate Research (1 semester) |

Biology:

| | |
|---|---|
| Freshman Biology Seminar | Medical & Veterinary Entomology |
| Principles of Biology (two semesters) | Introduction to Animal Physiology |
| Principles of Biology Lab (two semesters) | Environmental Animal Physiology |
| Genetics | Immunology |
| Cell & Molecular Biology | Immunology Lab |
| General Zoology | Ecology |
| Evolutionary Biology | Biological Statistics |
| Ethology | Neurochemical Regulation |

Other Sciences

| | |
|---|---|
| General Chemistry (two semesters) | General Physics (two semesters) |
| General Chemistry Lab (two semesters) | General Physics Lab (two semesters) |
| Organic Chemistry (two semesters) | |
| Organic Chemistry Lab (two semesters) | |

COLLOQUIA ATTENDED

Sikkema, Kathy, Yale University School of Medicine (11/3/05). *HIV/AIDS Prevention and Mental Health: Community Based Intervention Trials*. Department of Psychology, Virginia Tech.

Curry, John F., Department of Psychology, Duke University (10/14/05). *How Should We Treat Adolescent Depression: Lessons from TADS*. Departments of Psychology and Human Development.

Muris, Peter, Department of Psychology, Erasmus University, The Netherlands (11/15/04). *The Developmental Psychopathology of Anxiety: Experimental and Clinical Findings*. Department of Psychology, Virginia Tech.

Hinshaw, Stephen, Department of Psychology, UC Berkeley (11/7/03). *Explanation and Clinical Trials in Developmental Psychopathology: Can Treatment Studies Teach Us About Theoretical Models?* Department of Psychology, Virginia Tech.

Burnham, Denis K., MARCS Auditory Research Laboratories, University of Western Sydney, Sydney, Australia (9/10/03). *The Development of Auditory-Visual Speech Perception in Infants, Children, and Adults*. Department of Psychology, Virginia Tech.