Social Anxiety and Problematic Drinking in College Students: Examining Potential Mediators

Carissa Gutsmiedl
Eastern Illinois University

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Social Anxiety and Problematic Drinking in College Students:
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Abstract

Social anxiety and problematic drinking are among the most prevalent disorders present in the college population. Having one or both of these disorders while in college can be detrimental to academic performance and can increase dropout rates. Social anxiety has been found to precede problematic drinking in previous research. The purpose of this study was to help determine what variables may explain this relationship (i.e., mediators). The current study tested whether emotion regulation difficulties, drinking motives, alcohol outcome expectancies, and self-discrepancy mediated the relationship between social anxiety and problematic drinking among college undergraduates (N = 135). Results indicated that emotion regulation difficulties partially mediates the relationship between social anxiety and dependence symptoms. Thus, individuals who experience social anxiety symptoms and have greater difficulties regulating their emotions could be at risk for developing problematic drinking. Therefore, emotion regulation difficulties should be considered in alcohol treatment and prevention programs targeting the college population.

Keywords: alcohol outcome expectancies, college student's, drinking motives, emotion regulation difficulties, problematic drinking, self-discrepancy, social anxiety
Social Anxiety and Problematic Drinking in College Students:
Examining Potential Mediators

College students are exposed to new people, new surroundings, and new experiences. For most, college is the first time students are living away from home; their first taste of freedom. This type of environment may be difficult to handle for individuals who experience social anxiety symptoms. The college environment encourages students to socialize along with consume heavy amounts of alcoholic beverages in social situations. Individuals who experience social anxiety symptoms are found to consume more alcoholic beverages while in social situations than other college students, resulting in more alcohol related problems (Terlecki, Ecker, & Buckner, 2014). The amount of alcohol consumed and social anxiety experienced by college students is significantly higher than any other age group (Johnston, O'Malley, & Bachman, 2000; Schry, Roberson-Nay, & White, 2012). When exploring the relationship between social anxiety and problematic drinking, most research has found that social anxiety symptoms premediates alcohol use. That means that individuals with social anxiety are at a higher risk for developing future alcohol related problems (Villarosa, Madson, Zeigler-Hill, Noble, & Mohn, 2014).

Research has examined several factors to better explain the relationship between social anxiety and problematic drinking, such as emotion regulation difficulties, alcohol outcome expectancies, drinking motives, and self-discrepancy. The combination of both social anxiety and problematic drinking can be detrimental to the college population because dropout rates increase and academic success is impacted (Ham & Hope, 2006; Nagai-Manelli et al., 2012). The present study used a parallel mediation model to
examine emotion regulation difficulties, alcohol outcome expectancies, drinking motives, and self-discrepancy as mechanisms through which social anxiety may be linked to problematic drinking in college students.

**Social Anxiety**

Social anxiety concerns excessive fear or anxiety in social situations where an individual feels they are being negatively evaluated or scrutinized by the other people surrounding them (American Psychiatric Association, 2013). Social anxiety affects 2% to 13% of individuals within the United States at a clinical level (Kessler, Stein, & Berglund, 1998; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992). Prevalence rates of social anxiety symptoms experienced in the college-aged population can range from 16% to 25% (Russell & Shaw, 2009; Webb, Ashton, Kelly, & Kamali, 1996). The prevalence rates for college students are much higher than the general population, suggesting that college aged students are at a higher risk of experiencing social anxiety.

There are two main components to social anxiety based on Mattick and Clarke’s (1998) model: social performance and social interaction. This model was used to assess social anxiety symptoms in the current study. Russell and Shaw (2009) found that 59.2% of college students have experienced fear and avoidance of performance and interaction situations (70.9% fear; 47.5% avoidance), with 16.4% in the clinically significant range (i.e., moderate to severe). Kessler and colleagues (2005) found social anxiety (12.1%) to be the third most prevalent psychological disorder, following alcohol abuse (13.2%) and depression (16.6%).

The number of social situations an individual fears or avoids has been found to be correlated positively with impairment, dysfunctional attitudes, lack of social support, and
comorbidity with other psychopathologies (i.e., mental health concerns and neuroticism; Vriends et al., 2007), which can be detrimental to a college students education and success. One disorder on which much research has focused is problematic drinking (Buckner, Timpano, Zvolensky, Sachs-Ericsson, & Schmidt, 2008; Randall, Thomas, & Thevos, 2001).

**Problematic Drinking**

College students who engage in binge-drinking behavior are at risk for health problems (Wechsler, Dowdall, Davenport, & Castillo, 1995) and adverse consequences, such as fatal or non-fatal injuries, suicide attempts, sexually transmitted diseases, violence, and academic failure (Perkins, 2002). Over 80% of college students have drank in a given one-year period; forty percent of college students who have drank are considered to engage in heavy or binge drinking episodes (Johnston, O’Malley, & Bachman, 2000). A ‘heavy’ or ‘binge drink’ episode is considered to be five or more standard drinks for men and four or more standard drinks for women in a two-hour period (O’Malley & Johnston, 2002). The prevalence rate for alcohol dependence within the college-aged population is 11.4% (Clements, 1999), higher than other non-college students of the same age. Heavy episodic drinking rates were also found to be greater for college students (41.7%) than for same age non-college students (36.5%; Hingson, Heeren, Zakocs, Kopstein, and Wechsler, 2001).

Zamboanga and colleagues (2009) studied college students’ drinking behaviors and living situations; they found that college students who reside in residence halls engaged in higher levels of hazardous drinking than college students who live off-campus, providing evidence that the environment can influence social and cognitive
perceptions when it comes to alcohol use and drinking behavior. In the college population, drinking norms and expectations are strongly associated with the increasing of alcohol-related problems (Ham & Hope, 2006). This is detrimental to the college population because individuals who experience a combination of both social anxiety symptoms and alcohol related problems are at a higher risk of dropping out of college due to the difficulties experienced (Ham & Hope, 2006).

The current study used the Babor, Higgins-Biddle, Saunders, & Monteiro (2001) model to assess problematic drinking. This model incorporates the frequency (i.e., how often an individual drinks), quantity (i.e., how much an individual drinks), and alcohol-related consequences (i.e., negative consequences due to intoxication) with regard to alcohol consumption, which are three of the main components associated with alcohol related problems.

Social Anxiety and Problematic Drinking

One of the most common comorbid disorders for social anxiety is alcohol dependence (Buckner, Timpano, Zvolensky, Sachs-Ericsson, & Schmidt, 2008). Randall, Thomas, and Thevos (2001) found that approximately one fifth of individuals with social anxiety also had a comorbid substance use disorder, with comorbidity occurring in 20% of individuals receiving treatment for social anxiety and 15% of individuals receiving treatment for alcohol use disorder. The direction of the path between alcohol use and social anxiety is unclear (i.e., whether alcohol use leads to social anxiety or social anxiety leads to alcohol use). Research has found evidence for both paths, but most studies have found that it is more common for social anxiety to lead to alcohol use.
Bakken, Landheim, and Vaglum (2004) found that significantly more clients had a primary anxiety disorder, particularly social anxiety, prior to the onset of a substance use disorder versus clients who had a substance use disorder prior to developing an anxiety disorder. In an early study, Williams (1966) found that, for individuals whose anxiety preceded “alcoholism”, alcohol decreased their negative anxiety symptoms (e.g., physiological arousal, fear of negative evaluation, social avoidance, perceived social deficits, and low positive affect), leading to positive effects and expectations from the individual experiencing anxiety. Alcohol is sometimes used to help manage physiological arousal and negative affect along with increase their positive affect and help facilitation in social situations (Buckner, Heimberg, Ecker, & Vinci, 2013). Individuals who use alcohol to manage their anxiety symptoms tend to be at a higher risk for alcohol related problems (Buckner & Schmidt, 2009).

Terlecki, Ecker, and Buckner (2014) found that college students’ social anxiety symptoms were related to heavier drinking behaviors in social situations and more drinking problems than individuals who did not experience social anxiety symptoms. In another older study, social anxiety predicted “alcoholism” in 82 percent of clients in a clinical sample (Mullaney and Trippett, 1979). Similarly, when examining comorbid social anxiety and alcohol dependence disorders, social anxiety preceded alcohol dependence in 80 percent of the clients examined (Buckner, Timpano, Zvolensky, Sachs-Ericsson, & Schmidt, 2008). Therefore, not all clients or individuals experience social anxiety prior to the onset of alcohol use.

Some individuals may engage in problematic alcohol use, resulting in social anxiety symptoms (Buckner & Schmidt, 2009). Possible explanations for this
directionality may be due to a predisposition toward social anxiety, or alcohol use may result in an impairment in socialization, thus spurring the onset of social anxiety symptoms (Buckner, Timpano, Zvolensky, Sachs-Ericsson, & Schmidt, 2008). Either social anxiety or alcohol use alone strongly predicts the onset of developing the other later on (Kushner, Abrams, & Borchardt, 2000). For social anxiety leading to alcohol use, the pharmacological effects of alcohol may help reduce the level of anxiety experienced, which may result in a reinforcing effect (LaBounty, Hatsukami, Morgan, & Nelson, 1992). For alcohol use leading to social anxiety, the change that alcohol has on individuals’ neuro-chemical system may trigger the onset of anxiety symptoms (Borg, Kvande, & Sedvall, 1981; Coffman & Petty, 1985).

Available research to date suggests that individuals with high social anxiety are more likely to have a simultaneous alcohol use disorder as compared to individuals with little to no symptoms of social anxiety. Buckner and Heimberg (2010) found that individuals with high social anxiety are more likely to go to social events if alcohol is present rather than if alcohol is unavailable. Individuals with high social anxiety report greater rates of drinking to cope in social situations, resulting in more problems experienced (Schry & White, 2013). Linden, Lau-Barraco, and Milletich (2012) found that individuals with high social anxiety are less likely or able to use protective behavioral strategies (i.e., monitor drinking behavior and reduce negative consequences) while drinking, resulting in the experience of negative consequences; the reinforcing effects of alcohol help reduce individuals’ anxiety and need for safety behaviors (Battista, McDonald, & Stuart, 2012). Therefore, social anxiety may lead to problematic drinking only when individuals experience more severe symptoms (Bruch et al., 1992).
Using the Babor, Higgins-Biddle, Saunders, & Monteiro (2001) model, alcohol-related consequences have been discussed. Regarding the quantity and frequency of alcohol consumed by those with social anxiety compared to those who do not have social anxiety, results vary. Schry and White (2013) found in college students, that individuals with high social anxiety consumed less alcohol, drank less frequently, and consumed fewer drinks. As social anxiety increased, drinking behavior decreased. In contrast, Dahl and Dahl (2010) found that the social anxiety group drank less frequently than the control group but consumed more in social situations. This finding may be because individuals with social anxiety are more likely to avoid social situations all together, which decreases their frequency and need to drink (Tran, Haaga, & Chambless, 1997). When individuals with social anxiety are placed into social situations, they are more likely to cope with their negative emotions with the consumption of alcohol, which helps explain why they may consume more alcohol in social situations (Terlecki, Ecker, & Buckner, 2014). Norberg, Norton, and Oliver (2009) found that, when individuals with high social anxiety drink to alleviate aversive emotions, rather than increase positive emotions, they are more likely to experience adverse consequences and increase their risk for alcohol-related problems. Therefore, if an individual is consuming alcohol to regulate emotions, then she/he may experience consequences that are more negative and can lead to alcohol related problems.

Models Explaining the Social Anxiety-Problematic Drinking Relationship

Decades of research have tried to explain why the comorbidity rates between social anxiety and substance use are so high. Several theories have addressed this relationship, including Hull’s self-awareness model, the tension reduction hypothesis, and
the self-medication hypothesis. Hull (1981) conducted an analysis that examined the causes and effects of alcohol consumption and concluded that alcohol affects an individual’s cognition, affect, and social behaviors. Alcohol inhibits an individual’s self-awareness process, a higher order mental process, which can help decrease an individual’s sensitivity to appropriate behavioral cues and decrease negative self-evaluation (i.e., self-criticism and negative affect related to feedback associated with past behaviors). This decrease in sensitivity can serve as a psychological relief to some individuals, which can explain their motivation to consume alcohol.

The tension reduction hypothesis, proposed by Conger (1956), is explained as a cycle consisting of (a) increase in internal tension, (b) reinforcement of alcohol consumption on reducing tension, and (c) the reinforcement effect of alcohol strengthens alcohol consumption thus becoming the primary response to internal tension. In other words, alcohol becomes reinforcing to those with heightened tension (i.e., anxiety) because alcohol helps inhibit tense feelings. It should be noted, however, that for the studies that have found support for this model, tension reduction was not the only explanation of drinking behavior: it was one of many (Powers & Kutash, 1985; Yankofsky, Wilson, Adler, Hay, & Vrana, 1986).

Finally, the self-medication hypothesis, proposed by Khantzian (1985), theorizes that individuals use the short-term effects of drugs and alcohol to cope with mental illness and painful emotions. Therefore, individuals may use substances or alcohol as accessible medication to feel momentarily better in unmanageable situations. This coping mechanism becomes reinforcing for future drinking to cope with behaviors, increasing the risk for hazardous drinking (Greeley & Oei, 1999; Khantzian, 1997). For example,
individuals who experience symptoms of social anxiety feel distress. Alcohol consumption relieves symptoms of distress. The negative reinforcing effects of alcohol help eliminate the distress experienced (i.e., individuals continue to turn to alcohol to help eliminate that distress), thus leading to the excessive use of alcohol (Chutuape and de Wit, 1995). Research provides evidence that alcohol consumption is highest when individuals experience moderate levels of social anxiety symptoms: a curvilinear relationship (Crum & Pratt, 2001; Strahan, Panayiotou, Clements, & Scott, 2011).

Although all of these models have shown some promise in explaining the link between social anxiety and problematic drinking, none seems to fully encapsulate this phenomenon. However, what all of these models seem to touch upon is the issue of emotion regulation.

**Emotion Regulation**

Emotion regulation is the process by which individuals manage or control their emotions, determining which emotions they will have, when they will have them, and how those emotions will be experienced and expressed (Gross, 1998). Gross (1998) describes the emotion regulation process in five steps: 1) situation selection, 2) situation modification, 3) attentional deployment, 4) cognitive change, and 5) response modulation. Situation selection is an environmental change in which an individual can regulate their emotions, such as avoiding or approaching certain people, places, objects, or activities. For example, someone who has social anxiety might avoid situations with large numbers of people to manage their anxiety; it is choosing or avoiding a situation that helps an individual manage their emotions. Situation modification is the alteration of a situation to control the impact on emotions experienced, such as telling a neighbor that
he is being too loud; here the noise is negatively influencing one’s emotions, and telling
the neighbor to quiet down can modify the situation to have less impact on the emotions
experienced. Attentional deployment is the use of distraction, concentration, or
rumination to either ignore, replace, or focus on an emotion-evoking situation. Whether it
be repetitively thinking about the negative emotions, or focusing on a positive activity,
such as drawing, it is a way to change attention in an emotional situation.

Cognitive change is the interpretation of the emotions experienced in a situation,
either in a positive or negative manner. If a project did not turn out the way it was
supposed to, the situation could be interpreted negatively whereby a person could feel
like they have failed or cannot do anything right. On the other hand, it could be
interpreted positively, whereby a person could feel like they will do better next time and
see the good aspects that came from the failed project. Finally, response modulation is
controlling or managing the physiological, experiential, or behavioral emotional
response. This control could involve using substances, medication, exercise, or relaxation
techniques to regulate the physiological response of anxiety evoked from a situation.

Research has focused on two primary models: Gross and John’s (2003) model and
Gratz and Roemer’s (2004) model. Both models examine techniques individuals use to
regulate their emotions. Gross and John’s (2003) model focus on cognitive reappraisal
and expressive suppression. Cognitive reappraisal is the way in which individuals see a
stressful situation from a different perspective to minimize the negative impact
experienced (Gross, 1998), which is associated with experiencing greater positive
emotions, positive well-being, better interpersonal functioning, and a decrease in
physiological, behavioral, and experiential responding (Gross, 2001; Gross & John,
Expressive suppression is the way in which individuals avoid expressing their emotions outwardly, keeping their emotions in (Gross, 1998). This is associated with experiencing greater negative emotions, adverse social consequences, negative effects on memory, and an increase in physiological responding (Gross, 2001; Gross & John, 2003). Based on the five-step process of emotion regulation discussed previously, cognitive reappraisal occurs in the early processes where changes in the thoughts occurs, while expressive suppression occurs in the later processes where outward signs of emotion are expressed (Gross, 2001). When it comes to social anxiety, expressive suppression techniques are used more frequently, leading to feeling less positive emotions and experiencing fewer positive social situations (Farmer & Kashdan, 2012; O’Toole, Jensen, Fentz, Zachariae, & Hougaard, 2014; Werner, Goldin, Ball, Heimberg, Gross, 2011). Werner, Goldin, Ball, Heimberg, and Gross (2011) found that individuals with social anxiety are less able to implement cognitive reappraisal techniques, which means that they have more difficulties changing their emotions from negative to more positive.

Gratz and Roemer’s (2004) model focuses on emotion dysregulation (i.e., difficulties with regulating ones emotions) across six factors: 1) nonacceptance of emotional responses (i.e., not accepting negative emotions experienced), 2) difficulty engaging in goal-directed behavior (i.e., difficulties with task completion and concentration during negative emotions), 3) impulse control difficulties (i.e., difficulty controlling behavior during negative emotions), 4) lack of emotional awareness (i.e., acknowledgment of emotions), 5) limited access to emotion regulation strategies (i.e., belief that little can be done to alleviate negative emotions), and 6) lack of emotional clarity (i.e., not understanding what emotions are being experienced).
Research using this model has examined emotion regulation difficulties in conjunction with both social anxiety and problematic drinking. Orgeta (2009) found an age difference in emotion regulation among healthy adults, with younger adults reporting greater emotion regulation difficulties than older adults. Thus, as individuals age, they acquire more emotion regulatory strategies and become more aware of their emotions experienced. Individuals with social anxiety experience even greater difficulties regulating their emotions than healthy college aged individuals (Mennin, McLaughlin, & Flanagan, 2009). Helbig-Lang, Rusch, and Lincoln (2015) found that, when compared to healthy controls, individuals with social anxiety experience higher levels of emotion regulation difficulties in all areas besides lack of emotional awareness.

Emotion regulation difficulties have been correlated with specific aspects of social anxiety. For example, difficulties with non-acceptance of negative emotions and impulse control were related positively to both social performance anxiety and social interaction; whereas limited access to emotion regulatory strategies was related positively to just social interactions. Difficulties with emotional clarity and awareness were not associated with either aspect of social anxiety (Rusch, Westermann, & Lincoln, 2012). Therefore, not all emotion regulation difficulties appear to be associated with social anxiety. However, the more emotion regulation difficulties an individual experiences, the more likely they will use maladaptive behaviors to cope with experienced negative emotions, such as deliberate self-harm, disordered eating, or substance misuse (Buckholdt et al., 2015).

Dvorak and colleagues (2014) found impulse control difficulties were associated with an increased likelihood to drink and experience problems due to drinking. Lack of
emotional clarity was associated with alcohol use and alcohol related problems; the authors posited that the explanation for this relationship might be that individuals may not realize that alcohol may be the cause of their negative consequences (Dvorak et al., 2014). Difficulties with goal directed behaviors were only associated with alcohol related consequences when experiencing negative emotions. Finally, non-acceptance of emotional responses was associated with the frequency of alcohol-related consequences amongst problematic drinkers. Lack of emotional awareness and limited access to emotion regulatory strategies were not found to be related to alcohol-related consequences. Overall, individuals who engage in problematic drinking had greater difficulties regulating their emotions when compared to social drinkers (Fox, Hong, & Sinha, 2008).

Drinking alcohol is considered an overt type of emotion regulatory strategy; overt refers to regulating one’s emotions behaviorally, such as drinking, eating, controlled breathing, or venting (Aldao & Dixon-Gordon, 2014). Covert strategies, in contrast, are used to regulate one’s emotions cognitively or internally, such as the use of cognitive reappraisal and suppression. Aldao and Dixon-Gordon (2014) found that individuals’ use of overt strategies predicted psychopathology beyond the use of covert strategies; individuals seem to experience greater emotional difficulties when they deal with their emotions externally rather than internally. The college-aged population may be especially vulnerable to the use of overt strategies because drinking is perceived as a normative behavior (Perkins, 2002). When social anxiety is added to the equation, college students are more likely to receive significantly lower academic grades (Brook & Willoughby, 2016), increasing their risk of dropping out of school. In sum, emotion regulation may
explain some of the relationship between social anxiety and problematic drinking; however, other variables likely play a role. For example, much literature has examined the possible role of individuals’ views concerning alcohol and how it can affect them.

**Alcohol Outcome Expectancies and Drinking Motives**

Alcohol outcome expectancies are cognitive, behavioral, and emotional beliefs about the effects of drinking alcohol that influence an individual’s decision to engage in alcohol consumption (Hasking, Lyvers, & Carlopio, 2011; Sher, Wood, Wood, & Raskin, 1996). Alcohol outcome expectancies can be either positive or negative. Fromme, Stroot, and Kaplan (1993) formulated a model regarding positive and negative alcohol outcome expectancies. There are four subtests underlining positive alcohol outcome expectancies, consisting of 1) sociability, 2) tension reduction, 3) liquid courage, and 4) sexuality. There are three subtests underlining negative alcohol outcome expectancies, consisting of 1) cognitive and behavioral impairment, 2) risk and aggression, and 3) self-perception. Research using this model has found both positive and negative alcohol outcome expectancies to be related to problematic drinking (Dickson, Gately, & Field, 2013; Dunne, Freedlander, Coleman, & Katz, 2013).

Based on expectancy theory, a combination of both high positive and low negative alcohol outcome expectancies regarding alcohol use are found to lead to excessive alcohol consumption and problematic drinking (Burke & Stephens, 1999; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007). Nicolai, Moshagen, & Demmel (2012) found that alcohol outcome expectancies decrease linearly as individuals age, meaning that younger adults engage in more problematic drinking and alcohol consumption than older adults (Satre & Knight, 2001). College students are at a higher risk of experiencing
problematic drinking than older adults due to differences in the alcohol outcome
expectancies held (Pabst, Kraus, Piontek, Mueller, & Demmel, 2013).

Research examining alcohol outcome expectancies found sociability (i.e., positive
alcohol outcome expectancy) to influence the relationship between social anxiety and
problematic drinking (Ham, 2009; Ham, Hope, White, & Rivers, 2002). Specifically,
only when social anxiety is paired with the alcohol outcome expectancy of sociability, do
college students become more vulnerable to problematic drinking; social anxiety alone
does not increase college students’ risk for engaging in problematic drinking (Ham,
2009). Ham, Zamboanga, and Bacon (2011) found social anxiety to be related to
problematic drinking when individuals hold higher positive alcohol outcome
expectancies and lower negative alcohol outcome expectancies in convivial settings (e.g.,
at a party). In other words, context influences expectancies, particularly social contexts.

Bruch and colleagues (1992) formulated a model for alcohol outcome
expectancies specific to social situations, which is relevant when examining individuals
with social anxiety. Individuals who receive a higher score are considered to hold more
positive expectancies toward alcohol consumption, thus increasing alcohol consumption.
Research examining individuals with social anxiety have found that they consume either
less alcohol than normal participants do (Rohsenow, 1982), or they consume more
alcohol than normal participants do (Higgins & Marlatt, 1975). The factor of alcohol
expectancies relevant to social situations helps explain these mixed results because
individuals with greater positive expectancies toward alcohol consumption believe
alcohol will decrease social anxiety symptoms experienced and are more likely to
consume more alcohol than those who have lower positive expectancies toward alcohol
consumption (Bruch et al., 1992; Tran & Haaga, 2002). Expectancy theory contributes to alcohol motivation (Jones, Corbin, & Fromme, 2001).

Drinking motives are the effects an individual would like to achieve while consuming alcohol (Cox & Klinger, 2011). Cox and Klinger (1988) found drinking motives to be the final common pathway to alcohol consumption, even though there are several factors that contribute to the decision making process of consuming alcohol. Cooper's (1994) model focuses on four types of drinking motives; 1) social (i.e., drink to be more social), 2) coping (i.e., drink to forget about problems), 3) enhancement (i.e., drink to feel better), and 4) social pressure and conformity (i.e., drink to fit in). All drinking motives have been found to be related to problematic drinking (Hasking, Lyvers, & Carlpio, 2011; Schry & White, 2013). Coping and enhancement motives are associated with internal states, while social and conformity motives are associated with external states (Ham & Hope, 2003). Drinking to cope has been found to be the strongest predictor to problematic drinking (Merrill & Thomas, 2012). Coping motives are related to negative emotions; individuals drink to avoid experiencing negative internal states, using alcohol as a coping device (Cooper, 1994; Cooper, Frone, Russell, & Mudar, 1995). Merrill and Read (2010) found drinking to cope to relate to specific problem domains such as academic/occupational difficulties, risky behaviors, and poor self-care.

Enhancement motives increase positive affect (Ham & Hope, 2003). Problems are more likely to occur when higher levels of alcohol are consumed, resulting in black outs or significant memory loss (Merrill & read, 2010). Conformity motives are associated with feelings of anxiety and self-consciousness related to peer acceptance and approval (Stewart & Devine, 2000). Specific problem domains that may affect individuals while
holding this motive are poor self-care, impaired control, and diminished self-perception (Merrill & Read, 2010). Social motives are held as a sense of affiliation with peers or surrounding environment (Ham & Hope, 2003). Individuals who hold social motives experience similar problem domains as conformity motives; they are both considered external states (Merrill & Read, 2010). Overall, individuals who report more motives are at a higher risk for engaging in problematic drinking (Damme, Maes, Clays, Rosiers, Hal, & Hublet, 2013).

Research has found all drinking motives to be associated with social anxiety symptoms, although negative reinforcement motives (i.e., drinking to avoid a negative situation) appeared to be more strongly related than positive reinforcement motives (i.e., drinking to obtain a positive outcome; Ham, Zamboanga, Bacon, & Garcia, 2009). Coping, conformity, and enhancement motives have been found to mediate the relationship between social anxiety and problematic drinking (Clerkin, Werntz, Magee, Lindgren, & Teachman, 2014; Lewis et al., 2008; Villarosa, Madson, Zeigler-Hill, Noble, & Mohn, 2014). With the age group of 18 to 25 years, coping motives mediated the relationship between high social anxiety symptoms and greater alcohol problems, meaning as social anxiety increases, the more problems the individual undergoes (Clerkin, Werntz, Magee, Lindgren, & Teachman, 2014). Alcohol outcome expectancies and drinking motives are not static; they are able to change based on the situation an individual is in. These changes can be effected by the discrepancies an individual holds.

**Self-Discrepancy**

Self-discrepancy theory is based on Rogers’ (1956) model of incongruence. Rogers explains incongruence as the difference between what an individual is actually
experiencing compared to how the individual perceives him/herself in a given situation (e.g., when an individual is perceiving themselves as overweight, when in actuality he/she is at a healthy weight). When those two variables are negatively correlated with one another, individuals experience a higher degree of incongruence; they become more susceptible to different emotional vulnerabilities. The literature uses several terms to describe this concept. Some use self-image (Moeller & Crocker, 2009), self-concept (Hicks, Schlegel, Friedman, & McCarthy, 2009), or self-discrepancy (Higgins, 1987). The current study will be using self-discrepancy, the most recent rendition of the concept used in literature.

Higgins' (1987) model of self-discrepancy takes Rogers' concept of incongruence and compares self-domains to specific types of emotional vulnerabilities. Self-domains consist of the actual self, ideal self, and ought self. The actual self is comprised of the attributes an individual actually possesses. The ideal self encompasses hopes and aspirations an individual would like to possess. Finally, the ought self is made of obligations and responsibilities an individual believes they should possess. Those domains are further examined using two different standpoints, own (i.e., an individual's own perception) and other (i.e., a significant other's perception who is closely related to the individual being examined; Turner, 1956). Therefore, research uses a combination of standpoints and self-domains to study the different emotional vulnerabilities experienced. Based on self-discrepancy theory, actual/own and actual/other are an individual's self-concept; the baseline for comparison (Wylie, 1979). The ideal/own, ideal/other, ought/own, ought/other are an individual's self-guides: comparisons to the self-concept to test for emotional vulnerabilities (Higgins, Strauman, & Klein, 1986). The goal of self-
discrepancy theory is to have an individual's self-concept match with their self-guides (i.e., their actual self matches their ideal self and ought self).

There are eight self-concept self-guide matches examined in research to test emotional vulnerabilities experienced. Actual/own vs. ideal/own (ASIS), actual/own vs. ideal/other (ASIO), actual/other vs. ideal/own (AOIS), actual/other vs. ideal/other (AOIO), actual/own vs. ought/own (ASOS), actual/own vs. ought/other (ASOO), actual/other vs. ought/own (AOOS), and actual/other vs. ought/other (AOOO). If an individual's self-concept does not match up with their ideal self (i.e., ASIS, ASIO, AOIS, and AOIO), then they are more likely to experience an absence of positive emotions (Higgins, 1996). This means individuals are found to be more vulnerable to dejection-related emotions such as feeling sad or empty, better defined as depression (Higgins, 1987; Higgins, 1996; Strauman & Higgins, 1988). If an individual's self-concept does not match up with their ought self (i.e., ASOS, ASOO, AOOS, and AOOO), then they are more likely to experience a presence of negative emotions (Higgins, 1996). This means individuals are found to be more vulnerable to agitation-related emotions such as fear or tension, better defined as anxiety (Higgins, 1987, Higgins, 1996, Strauman & Higgins, 1988). If individuals experience these discrepancies between their self-concept and self-states, then the larger the discrepancy the greater discomfort an individual experiences (Higgins, 1987).

The current study examined the discrepancy between individuals' 'actual selves' versus their 'ought selves', for this discrepancy is found to be related to social anxiety symptoms. Little research has examined the relationship between social anxiety and problematic drinking using the self-discrepancy theory. Strauman and Higgins (1988)
found that, when examining social anxiety, as the magnitude of the self-discrepancy between an individual's actual self compared to their ought self increased, the number of social anxiety symptoms increased. Individuals with social anxiety experience greater discrepancies than their non-anxious counterparts (Weilage & Hope, 1999). Moeller and Crocker (2009) found that, when examining problematic drinking, college students with high self-image goals were more likely to drink to alleviate negative affect experienced. Self-image goals, closely related to self-discrepancy, are defined as the goals an individual seeks to maintain positive views made by others and gain something for themselves (e.g., manipulate how others view them; Crocker & Canevello, 2008; Schlenker, 2003).

Research using the self-discrepancy theory has examined variables related to the social anxiety and problematic drinking relationship, such as emotion regulation and alcohol outcome expectancies. Based on Higgins' (1987) theory on self-discrepancy, discrepancies between an individual's actual state and desired state evoke negative emotions. When this discrepancy happens, individuals try to engage in self-regulatory behaviors to minimize the negative emotions experienced (Duval & Wicklund, 1972). Brown and McConnell (2011) examined the relationship between self-regulatory behavior and discrepancies. They found that individuals tend to engage in self-regulatory behaviors after positive emotions have been evoked from a discrepancy, contradicting self-regulation theories. Instead, individuals tend to pay more attention to how they think they will feel rather than what they are currently feeling. Therefore, anticipated emotions guide individuals' behaviors indirectly. Only through repetitive exposure to experiences
do emotions guide behaviors (i.e., emotions resulting from a discrepancy stimulates learning and guides anticipated emotions to induce self-regulation).

Individuals' self-concepts have also been found to serve as a motivational influence toward alcohol consumption (Steele & Josephs, 1990). Not only can self-concept influence the choice to consume alcohol, but once consumed, alcohol can influence an individual's self-concept. Hicks, Schlegel, Friedman, and McCarthy (2009) examined the role of alcohol expectancies on self-concept and found when individuals expect sociability to be a factor of alcohol consumption; they are more likely to view themselves as more sociable. This change in self-concept only occurred when introduced to alcohol-related images or words, not in the control group. Therefore, alcohol expectancies change how individuals view themselves, not only when consuming alcohol, but also when exposed to alcohol-related stimuli.

**Current Study and Hypotheses**

The main goal of the present study was to examine the relationship between social anxiety symptoms and problematic drinking, as well as the potential influence on this relationship of emotion regulation difficulties, alcohol outcome expectancies, drinking motives, and self-discrepancy. The current study used a college-aged population to examine social anxiety and problematic drinking due to the high rates of symptoms experienced in this population (Johnston, O'Malley, & Bachman, 2000; Schry, Roberson-Nay, & White, 2012). Research has found mixed results regarding the directionality of the relationship between social anxiety symptoms and problematic drinking in college students. This study improved on other studies by incorporating a comprehensive definition of problematic drinking encompassing frequency, quantity, and negative
consequences in regard to alcohol consumption (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

The variables of alcohol outcome expectancies and drinking motives have been examined frequently in research when it comes to the relationship between social anxiety and problematic drinking. These variables were tested for replication purposes to add to the generalizability of results. Research has found alcohol outcome expectancies specific to social situations and positive alcohol outcome expectancies (Ham, 2009; Obasi, Brooks, Caranagh, 2016; Tran & Haaga, 2002), as well as coping, enhancement, and conformity motives (Clerkin, Werntz, Magee, Lindgren, & Teachman, 2014; Norberg, Norton, Oliveier, & Zvolensky, 2010; Villarosa, Madson, Zeigler-Hill, Noble, & Mohn, 2014) to mediate the relationship between social anxiety and problematic drinking.

To our knowledge, only one study has examined the relationship between social anxiety symptoms and problematic drinking as mediated by emotion regulation difficulties; that study found emotional clarity and limited access to emotion regulation strategies mediated the connection between social anxiety and problematic drinking (Veilleux, Skinner, Reese, & Shaver, 2014). No studies, to our knowledge, have examined self-discrepancy as a mechanism between social anxiety symptoms and problematic drinking. Although, studies have established correlations between social anxiety symptoms, problematic drinking, and self-discrepancy (Moeller and Crocker, 2009; Strauman and Higgins, 1988). Therefore, this study served as an extension to previous research by exploring all of these factors together.

Specifically, the model tested in this study focused on the relationship between social anxiety and problematic drinking as mediated by (1) emotion regulation
difficulties, (2) alcohol outcome expectancies, (3) drinking motives, and (4) self-discrepancy. Although we initially set forth these mediated models for testing, we first examined correlations between these variables to guide our final mediated model.

The hypothesis examined the relationship between social anxiety and problematic drinking as mediated by emotion regulation difficulties, alcohol outcome expectancies, drinking motives, and self-discrepancy. Specifically, we predicted that the relationship between social anxiety and problematic drinking will be mediated by emotion regulation difficulties, alcohol outcome expectancies, drinking motives, and self-discrepancy.

Method

Participants

Participants were undergraduates enrolled in an Introduction to Psychology course at Eastern Illinois University, who received course credit for their participation. An a priori power analysis was conducted in G*Power, which indicated that a minimum of 85 participants would be needed to obtain the needed power (α = .05, power = .80, and medium effect size = .15) to detect significant relationships. After completing data collection, we ended up with data from 150 participants.

The targeted age range for this study was 18 to 24 years old to focus on the traditional college aged population. Participants who fell outside of this age range (N = 6) were excluded from the analysis so that our sample would be more homogeneous. Finally, participants who completed our study in under five minutes (N = 9) were excluded from the analysis to ensure the accuracy of responses provided by the participants. Of the resulting 135 participants, only 112 completed all six measures. Thus, the single imputation approach to missing data was used; missing responses on measures
with 20% or less missing data were completed by averaging the remaining responses made by the participant. Any measures with more than 20% of data missing were removed from the analysis.

The sample of 135 participants consisted of 100 females (74.1%) and 35 males (25.9%) ages 18 to 22 years ($M = 18.93$, $SD = 1.10$); no participants were of the targeted ages of 23 or 24. Participants reported their class status: freshman (55.6%), sophomore (27.4%), junior (11.9%), senior (4.4%), and post bachelors (0.7%). In terms of ethnicity, 88 participants indicated White (65.2%), 33 Black (24.4%), 5 Bi-Racial (3.7%), 5 Hispanic (3.7%), 2 Latina (1.5%), and 2 Asian (1.5%). Students reported a wide variety of majors, which were classified in this study into the following categories: 7.4% Arts and Humanities, 5.9% Business, 68.9% Sciences, 8.9% Education, and 8.9% Undecided.

One hundred and fifteen participants (85.2%) reported drinking alcohol at least once in their lifetime. Of these students, 46.7% reported drinking within the last week, 22.2% reported drinking within the last month, 13.3% reported drinking within the last year, and 3.0% reported drinking over a year ago. The average amount of standard drinks participants reported consuming the last time they drank was 2.43 ($SD = 1.00$), with 12 (0.7%) being the highest reported amount of standard drinks consumed by a participant. The most amount of standard drinks participants reported consuming in a two-hour period was 3.18 ($SD = 3.52$), with 25 (0.7%) being the highest reported amount of standard drinks consumed by a participant in one two-hour period.

**Measures**

**Demographics questionnaire.** Participants were asked to provide basic demographics such as biological sex, age, year in school, major, and race/ethnicity (see
Appendix B). With regard to alcohol use, participants were asked to report the largest number of standard drinks consumed in a two-hour period during the past six months, the last time they consumed alcohol, and the amount of standard drinks consumed the last time they drank alcohol.

**Social anxiety symptoms.** Social anxiety symptoms were measured using the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998). The SIAS assesses the reactions in regard to social interactions. This self-report scale contains 20 items (see Appendix C), which are rated on a five-point Likert scale from 0 ("not at all characteristic of me") to 4 ("extremely characteristic of me"). A sample item is "I have difficulty making eye contact with others." The SIAS is scored from 0-80; greater scores represent higher levels of anxiety while engaging in social interactions. The SIAS shows high internal consistency (α's ranging from .85-.94; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998) and test-retest reliability (r's ranging from .86-.92; Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998).

**Problematic drinking.** Problematic drinking was measured using the Alcohol Use Disorder Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The AUDIT assesses the frequency, quantity, and negative consequences of alcohol consumption. This self-report scale contains 10 items (see Appendix D). Items 1-3 measure alcohol consumption (e.g., "How often do you have a drink containing alcohol?"). Items 4-6 measure dependence symptoms (e.g., "How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?"). Items 7-10 measure harmful alcohol use (e.g., "Have you or
someone else been injured as a result of your drinking?"). The AUDIT is scored from 0-40, with scores indicating a participant's risk related to alcohol. A score of 8 or more is an indicator for hazardous and harmful alcohol use, scores within the range of 8-15 represent a medium level of alcohol related problems, and scores of 16 or more represent a high level of alcohol related problems. The AUDIT shows high internal consistency (α's ranging from .87-.93; Kokotailo et al., 2004; Pal, Jena, & Yadav, 2004; Perula-de-Torres et al., 2005) and high test-retest reliability (r's ranging from .84-.95; Dybek et al., 2006; Kim, Gulick, Nam, & Kim 2008; Selin, 2003).

Emotion regulation. Emotion regulation was measured using the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS assesses emotion dysregulation, which measures the areas of difficulties an individual may be having with regulating their emotions. There are six subscales: (1) Nonacceptance of emotional responses (e.g., “When I am upset, I feel like I am weak”), (2) difficulties engaging in goal-directed behavior (e.g., “When I am upset, I have difficulties concentrating”), (3) impulse control difficulties (e.g., “When I am upset, I become out of control”), (4) lack of emotional awareness (e.g., “I pay attention to how I feel”), (5) limited access to emotion regulation strategies (e.g., “When I am upset, I start to feel very bad about myself”), and (6) lack of emotional clarity (e.g., “I have no idea how I am feeling”). This self-report measure contains 36 items (see Appendix E), which are rated on a five-point Likert scale from 1 (“almost never”) to 5 (“almost always”). The DERS shows high internal consistency (α ranging from .93-.94, average α for subscales ranging from .81-.85; Gratz & Roemer, 2004; Neumann, van Lier, Gratz, & Koot, 2009; Ritschel, Tone, Schoemann,
& Lim 2015), good test-retest reliability \((r = .88; \text{Gratz & Roemer, 2004})\), and adequate construct and predictive validity (Gratz & Roemer, 2004).

**Alcohol outcome expectancies.** Alcohol outcome expectancies were measured using the Alcohol Expectancies in Social Evaluative Situations Scale (AESES; Bruch et al., 1992). The AESES assesses positive alcohol outcome expectancies specific to social evaluative situations. This self-report measure contains 10 items (see Appendix F), which are rated on a five-point Likert scale from 1 ("not at all true") to 5 ("very much true"). Higher scores represent greater positive expectancies towards alcohol consumption. The AESES shows adequate internal consistency \((\alpha \text{ ranging from .84-.92; Bruch et al., 1992; Tran, Haaga, & Chambless, 1997})\), test-retest reliability \((r = .79; \text{Tran, Haaga, & Chambless, 1997})\), and convergent validity (Bruch et al., 1992; Tran, Haaga, & Chambless, 1997).

**Drinking motives.** Drinking motives were measured using the Drinking Motives Questionnaire-Revised (DMQ-R; Cooper, 1994). The DMQ-R assesses drinking motives related to distinct contexts and drinking related outcomes. This self-report measure contains 20 items (see Appendix G), which are rated on a five-point Likert scale from 1 ("almost never/never") to 5 ("almost always/always"). The items are broken down into four different types of motives to drink alcohol: (1) drinking to be sociable (e.g., "To be sociable"), (2) drinking to forget about problems (e.g., "To forget your worries"), (3) drinking to do things otherwise impossible (e.g., "So you won’t feel left out"), and (4) drinking to fit in (e.g., "To be liked"). The DMQ-R shows adequate internal consistency \((\alpha \text{ ranging from .82-.89 across subscales; Kuntsche, Stewart, & Cooper, 2008})\), reliability, and validity (Cooper, 1994; Kuntsche, Stewart, & Cooper, 2008).
Self-Discrepancy. Self-discrepancy was measured using the Integrated Self-Discrepancy Index (ISDI; Hardin & Lakin, 2009). The ISDI assesses an individual's ideal discrepancy and ought discrepancy from the participant's and/or significant other's point of view. The ideal discrepancy portion of the measure was excluded from this study since it has been linked to depression (Hardin & Lakin, 2009). The significant other's point of view was excluded from this study for convenience purposes. Participants were asked to list five traits or attributes they feel their significant other would like them to possess (see Appendix H). Participants were asked to rate each trait based on a five-point Likert scale of 1 ("completely applies to me") to 5 ("does not apply to me at all") to describe how much the participants feel they actually possess these traits expected by their significant other. The ISDI is scored from 1-5, higher scores indicating a larger discrepancy. An error was made in the distribution of this measure online. Participants were asked two questions instead of just the single question presented above. The first question asked participants to list five traits or attributes they feel their significant other would like them to possess on a five-point Likert scale of 1 (never) to 5 (always). The second question asked the participants to list the same five traits or attributes presented in the previous question and rate them on a five-point Likert scale of 1 (does not describe me at all) to 5 (completely describes me). This issue is discussed in more detail in the limitations section. The ISDI shows adequate discriminant validity and internal consistency ($\alpha = .80$ for the ought-self discrepancies; Hardin & Lakin, 2009).

Procedure

Participants were recruited from the undergraduate Introduction to Psychology courses via the SONA system, an online system used for research participant recruitment,
at Eastern Illinois University. After signing up, participants were provided a link to the online study. The link led participants to an informed consent page (see Appendix A) where they indicated their agreement to participate by clicking continue at the bottom of the page. After participants provided their consent, they were taken to the demographics portion of the study. The six measures used in this study were counter-balanced to account for order effects. Finally, participants were taken to a debriefing page (see Appendix I), thanking them for their time and provided them with an explanation of the study. Participants who completed the online survey received course credit.

Results

Descriptive statistics (i.e., means, standard deviations, and internal consistency) were calculated for the six variables included in this study. Zero-order correlations were calculated to examine the relationship between the main study variables. Finally, a parallel mediation model was tested to address the main hypothesis.

Descriptive Statistics and Correlations

Cronbach’s alphas were calculated for each of the six measures used in this study (see Table 1). Alphas for all measures were in the good to excellent range, except the alpha for the ISDI (α = .66), which was satisfactory. Each measure’s Cronbach alphas were comparable to those published in the literature (Bruch et al., 1992; Gratz & Roemer, 2004; Kuntsche, Stewart, & Cooper, 2008; Mattick & Clarke, 1998; Perula-de-Torres et al., 2005), with the exception of the ISDI. This discrepancy is most likely because this study removed the ideal self-portion of the measure unrelated to the current study.

Means, standard deviations, and ranges (see Table 1) for the main study variables were comparable to those found in similar studies, with the exception of social anxiety.
For example, Mattick and Clarke (1998) reported mean social anxiety scores for college aged participants at 19; the mean score for social anxiety in this study was 28. This difference could be due to increases in social anxiety over time. Alcohol use scores were comparable to the “not at risk” group in similar studies (DeMartini & Carey, 2012) and alcohol outcome expectancies in social situations were comparable to the grouping of “social anxiety without alcohol abuse” (Tran & Haaga, 2002). This finding makes sense because, in this study, participants scored higher in social anxiety and fell within the “not at risk” group for alcohol use. Based on Peters (2000), scores of 36 or higher on the SIAS are considered to have a probable social anxiety diagnosis; 36 (27%) participants fell within this clinically significant range. This percentage is higher than what was found in previous research. As for alcohol use, scores of 20 or higher on the AUDIT are considered to have a probable alcohol use disorder (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001); three (2%) participants fell within this clinically significant range. This percentage is lower than what was found in previous research. This difference may be due to use of a different measure as compared to previous research as well as underreporting from the participants.

Participants were separated into two groups: under 21 (N = 108) and 21 and over (N = 14) to explore a difference in alcohol related problems based on age. Under 21 reported a mean score of 4.86 (SD = 5.00), while 21 and over reported a mean score of 9.43 (SD = 5.32). It appears that there is a significant difference between these two groups when it comes to alcohol related problems, but not there are not enough participants who reported in the 21 and over group to conduct a proper analysis.
Zero-order correlations were conducted among the main study variables (see Table 2) to test our hypotheses. Social anxiety (SIAS) correlated positively with emotion regulation difficulties (DERS) \( r = .48, p < .001 \) and positively with self-discrepancy (ISDI) \( r = .27, p < .01 \). Problematic drinking as measured by the AUDIT correlated positively with alcohol outcome expectancies as measured by the AESES \( r = .42, p < .001 \) and positively with drinking motives as measured by the DMQ-R \( r = .61, p < .001 \). Social anxiety was not correlated with problematic drinking \( r = -.06, p = .48 \).

These results indicate that the hypothesis was not upheld, as we predicted that social anxiety would be correlated positively with alcohol outcome expectancies, drinking motives, and problematic drinking. We also predicted that problematic drinking would be correlated positively with emotion regulation difficulties and self-discrepancy.

For follow-up analysis, we separated the AUDIT into its three subscales: consumption, dependence, and alcohol-related consequences. The SIAS correlated negatively with the AUDIT subscale score of consumption \( r = -.20, p < .05 \) and positively with the AUDIT subscale score of dependence \( r = .18, p < .05 \). The SIAS was not correlated with the AUDIT subscale score of alcohol-related problems \( r = -.02, p = .87 \). The AUDIT subscale scores of consumption and dependence were used as the outcome predictors for our final analysis.

**Mediated Model**

Kenny (2018) integrated research developed by Baron and Kenny (1986), Judd and Kenny (1981), and James and Brett (1984) to discuss the four-steps required to test mediation. In step one, the causal variable must predict the outcome variable. In step two, there must be a relationship between the causal variable and the proposed mediating
variables. In step three, there must be a relationship between the proposed mediating variables and the outcome variable. Lastly, in step four, if the direct effect between the causal and outcome variables is no longer significant or is reduced a significant amount, then the model is considered to meet criteria for mediation. For the current study, the main model (see Figure 1) tested was social anxiety (SIAS) as the causal variable, emotion regulation difficulties (DERS), alcohol outcome expectancies (AESES), drinking motives (DMQ-R), and self-discrepancy (ISDI) as the mediators, and problematic drinking (AUDIT) as the outcome variable. Based on Kenny’s (2018) integrated mediation analysis process, step one of our hypothesized model was not supported, for social anxiety did not predict problematic drinking.

Exploratory analyses were conducted to examine variations of this main mediated model. Specifically, as mentioned previously in the correlations section, social anxiety correlated positively with two of the subscales for problematic drinking (alcohol consumption and dependency symptoms). Therefore, we tested four separate parallel mediation models to explore the data further.

**Exploratory Analysis**

In model one, (see Figure 2) we used social anxiety (SIAS) as the causal variable and the problematic drinking (AUDIT) subscale of alcohol consumption as the outcome variable, with emotion regulation difficulties (DERS), alcohol outcome expectancies (AESES), drinking motives (DMQ-R), and self-discrepancy (ISDI) as the mediators. Using Kenny’s (2018) integrated four-step process to determine mediation, step one was met for social anxiety significantly predicted alcohol consumption ($\beta = -.21, p = .03$). For step two (see Table 3), it was found that social anxiety significantly predicted emotion
regulation difficulties ($\beta = .47, p < .001$) and self-discrepancy ($\beta = .27, p < .01$). For step three, it was found that alcohol consumption significantly predicted alcohol outcome expectancies ($\beta = .21, p = .01$) and drinking motives ($\beta = .53, p < .001$). Although relationships were found in steps two and three, none of the mediators had a relationship with both social anxiety and alcohol consumption. For step four, the direct relationship between social anxiety and alcohol consumption was not reduced ($\beta = -.26, p < .01$); therefore mediation was not met for this model.

In model two, (see Figure 3) we used social anxiety (SIAS) as the causal variable and the problematic drinking (AUDIT) subscale of dependence as the outcome variable, with emotion regulation difficulties (DERS), alcohol outcome expectancies (AESES), drinking motives (DMQ-R), and self-discrepancy (ISDI) as the mediators. Using Kenny’s (2018) integrated four-step process to determine mediation, step one was met for social anxiety significantly predicted alcohol dependence ($\beta = .22, p = .03$). For step two (see Table 4), results were the same as what was reported in model one. For step three, it was found that alcohol dependence significantly predicted emotion regulation difficulties ($\beta = .24, p = .03$) and drinking motives ($\beta = .43, p < .001$). For step four, the direct relationship between social anxiety and alcohol dependence was no longer significant ($\beta = .07, p = .48$). A Sobell test was conducted and found emotion regulation difficulties partially mediated the relationship between social anxiety and alcohol dependence ($z = 2.06, p = .04$). The four variables explained 50% of the variance ($R^2 = .26, F(5, 106) = 7.25, p < .001$).

For models three and four, we separated the emotion regulation difficulties measure out into its six subscales to test for mediation. No relationship was found
between emotion regulation difficulties and alcohol consumption in model one, but there was a relationship found between emotion regulation and alcohol dependence in model two. This analysis was conducted to see if any specific subcomponents of emotion regulation difficulties mediated the relationship between social anxiety and the problematic drinking subscales. No other measures were separated into their subscale components, for the alcohol outcome expectancies in social situations measure and the self-discrepancy measure did not have subscales to separate into. In addition, the subscales for the drinking motives measure were found to be similar to the overall score; therefore, it did not seem pertinent to run this analysis.

In model three, (see Figure 4) we used social anxiety (SIAS) as the causal variable and the problematic drinking (AUDIT) subscale of consumption as the outcome variable, with emotion regulation difficulties subscales (i.e., nonacceptance, goals, impulse, awareness, strategies, and clarity), alcohol outcome expectancies (AESES), drinking motives (DMQ-R), and self-discrepancy (ISDI) as the mediators. Using Kenny's (2018) integrated four-step process to determine mediation, step one was met for social anxiety significantly predicted alcohol consumption ($\beta = -.22, p = .03$). For step two (see Table 5), it was found that social anxiety significantly predicted self-discrepancy ($\beta = .28, p < .01$), nonacceptance ($\beta = .61, p < .001$), goals ($\beta = .45, p < .001$), impulse ($\beta = .38, p < .001$), strategies ($\beta = .45, p < .001$), and clarity ($\beta = .36, p < .001$). For step three, it was found that alcohol consumption significantly predicted alcohol outcome expectancies ($\beta = .21, p = .01$) and drinking motives ($\beta = .53, p < .001$). Although relationships were found in step two and three, none of the mediators had a relationship with both social anxiety and alcohol consumption. For step four, the direct relationship between social
anxiety and alcohol consumption was not reduced ($\beta = -0.22, p = .02$); therefore mediation was not met for this model.

In model four, (see Figure 5) we used social anxiety (SIAS) as the causal variable and the problematic drinking (AUDIT) subscale of dependence as the outcome variable, with emotion regulation difficulties subscales (i.e., nonacceptance, goals, impulse, awareness, strategies, and clarity), alcohol outcome expectancies (AESES), drinking motives (DMQ-R), and self-discrepancy (ISDI) as the mediators. Using Kenny's (2018) integrated four-step process to determine mediation, step one was met for social anxiety significantly predicted alcohol dependence ($\beta = 0.22, p = .03$). For step two (see Table 6), results were the same as what was reported in model three. For step three, it was found that alcohol dependence significantly predicted drinking motives ($\beta = 0.43, p < .001$). Although relationships were found in step two and three, none of the mediators had a relationship with both social anxiety and alcohol dependence. For step four, the direct relationship between social anxiety and alcohol dependence was no longer significant ($\beta = 0.07, p = .48$). Even though step one and four met criteria, step two and three did not. Therefore, mediation was not met for this model.

**Discussion**

This study examined the relationship between social anxiety and problematic drinking as mediated by emotion regulation difficulties, alcohol outcome expectancies, drinking motives, and self-discrepancy. As previously discussed, social anxiety and problematic drinking are significantly higher in the college-aged population than any other age group. Research has found mixed results when it comes to the directionality of the relationship between social anxiety and problematic drinking for this population. Our
findings will be discussed and compared to previous research along with a discussion of clinical implications, limitations, and future research.

**Social Anxiety**

Social anxiety affects 16% to 25% of the college-aged population (Russell & Shaw, 2009; Webb, Ashton, Kelly, & Kamali, 1996). The more social situations an individual fears or avoids, the more impairment, lack of social support, and comorbidity with other psychopathologies an individual may experience. This can be detrimental to a college student’s education and success (Vriends et al., 2007). The current study examined the relationship between social anxiety and problematic drinking, emotion regulation difficulties, drinking motives, alcohol outcome expectancies, and self-discrepancy.

The relationship between social anxiety and problematic drinking was not significant in our study, which did not match up with previous research findings (Schry & White, 2013). To examine this potential relationship further, we used the subscales of the problematic drinking measure and found a negative correlation between an individual’s social anxiety score and the quantity and frequency of alcohol an individual consumed. We also found a positive correlation between an individual’s social anxiety score and the problematic drinking subscale score of dependency symptoms. This finding was similar to that of Dahl and Dahl (2010), where individuals with social anxiety consumed alcohol less frequently but tended to consume more alcohol in social situations. Based on our findings, individuals with higher levels of social anxiety may not consume as much alcohol as their peers, but they may rely more on alcohol when in social situations. In other words, individuals with social anxiety tend to avoid social situations overall. When
they do attend a social event, those individuals tend to depend more on alcohol and need less alcohol to gain the desired effect of decreasing their anxiety in social situations.

Next, we examined the relationship between social anxiety and emotion regulation difficulties. We found that the higher an individual’s social anxiety score the more emotion regulation difficulties they experienced. Specifically, social anxiety correlated with all the subscales except emotional awareness. This finding was similar to that of Helbig-Lang, Rusch, and Lincoln (2015), where individuals with higher social anxiety scores experienced more emotion regulation difficulties except for emotional awareness. Therefore, individuals who experience more social anxiety symptoms seem to be aware of their emotions but have difficulties controlling those emotions experienced.

We did not find a relationship between social anxiety and drinking motives, even after separating drinking motives into its positive (i.e., enhancement and social) and negative (i.e., cope and conformity) factors. Thus, individuals who experience higher levels of social anxiety symptoms may be motivated to consume alcohol the same way as individuals who experience lower levels of or no social anxiety symptoms. This finding is contrary to previous research; for example, Ham, Zamboanga, Bacon, and Garcia (2009) found that all drinking motives were associated positively with social anxiety. Some factors that may have influenced this difference is that Ham, Zamboanga, Bacon, and Garcia (2009) used an older version of the social anxiety scale used in the current study as well as their sample size being much larger. Given that the current study did not find a relationship between social anxiety and problematic drinking as a whole, it makes sense as to why individuals would hold similar drinking motives within the sample provided.
Social anxiety and alcohol outcome expectancies in social situations were not correlated in this study. This finding also was inconsistent with previous research; for example, Bruch et al. (1992) found that individuals with social anxiety held positive expectancies toward alcohol consumption in social situations. That is, they seemed to think that alcohol would decrease the social anxiety symptoms they were experiencing. Therefore, individuals with higher levels of social anxiety symptoms may drink more in social situations as compared to those with lower or no levels of social anxiety symptoms experienced. Given that the current study did not find a relationship between social anxiety and problematic drinking, it makes sense as to why participants held similar alcohol outcome expectancies.

Finally, we examined the relationship between social anxiety and self-discrepancy. We found that social anxiety scores correlated positively with self-discrepancy scores, meaning that there was a larger gap between their actual selves and ought selves. This finding was similar to that of Weilage and Hope (1999), where individuals with social anxiety experienced a larger discrepancy. Therefore, these individuals perceive that who they actually are is different from what others expect them to be, which may increase the anxiety they experience in social situations. Overall, based on our sample and findings, individuals experienced similar motives and expectancies towards alcohol, but individuals with higher social anxiety symptoms depend on the effects of alcohol more in social situations; this is most likely because they are unable to control their emotions effectively.
Problematic Drinking

Alcohol dependence affects 11.4% of the college-aged population, which is higher than non-college students of the same age (Clements, 1999). College students who engage in binge-drinking behaviors are at a higher risk for health problems and adverse consequences such as academic failure (Perkins, 2002). The current study examined the relationship between problematic drinking and emotion regulation difficulties, drinking motives, alcohol outcome expectancies, and self-discrepancy.

The relationship between problematic drinking and emotion regulation difficulties was not significant. After separating the problematic drinking scale into its three subscales, we found emotion regulation difficulties had a positive relationship with dependency symptoms, specifically all subscales besides emotional awareness and goal-directed behavior. Therefore, individuals who engage in problematic drinking tend to have difficulties accepting and understanding their emotions, controlling their impulses, and knowing how to cope with their emotions effectively. The problematic drinking subscales of consumption was unrelated to emotion regulation difficulties and its subscales. This result varies from those found in previous research. Fox, Hong, and Sinha (2008) found all emotion regulation difficulty subscales to be related to alcohol related consequences besides emotional awareness and lack of emotion regulation strategies. Emotional awareness overlaps with the current study’s results, but differs between goal-directed behavior and lack of emotion regulation strategies. Although the same variables were tested in both studies, the current study used a different problematic drinking measure than the one presented in Fox, Hong, and Sinha (2008), which may account for
the differences. No study, to our knowledge, has used the same measures as presented in the current study.

The current study found a positive relationship between problematic drinking and drinking motives. We separated drinking motives into positive and negative drinking motives and found problematic drinking to be related positively to both types of motives. This finding is similar to that of Damme and colleagues (2013), where individuals with higher problematic drinking scores experienced more motivation to drink alcohol. Therefore, individuals who reported more motives to drink alcohol were more likely to engage in problematic drinking, thus enhancing the generalization of results for this relationship.

Alcohol outcome expectancies in social situations were found to be related positively to problematic drinking. This finding was similar to that of Tran and Haaga (2002), where they found individuals who held more positive alcohol expectancies believed that their social anxiety would decrease, thus leading to an increase in alcohol consumption in social situations. This explanation does not fit entirely with the current study’s results; for individuals with higher social anxiety symptoms seemed to hold similar expectancies to those with lower social anxiety symptoms in social situations. The current study’s results suggest that people tend to hold higher alcohol outcome expectancies in social situations only when drinking has become problematic.

Finally, we examined the relationship between problematic drinking and self-discrepancy; we did not find a relationship between these two variables. No studies, to our knowledge, have examined this relationship before. Studies have used similar variables, such as self-image goals (Moeller & Crocker, 2009) instead of self-
discrepancy. Moeller and Crocker (2009) found individuals who engage in higher problematic drinking had an increase in self-image goals, which was dissimilar to what was found in the current study. Self-discrepancy was examined due to the high relationship self-discrepancy had with both social anxiety and emotion regulation difficulties. Self-discrepancy can be difficult to measure, for individuals’ self-discrepancies change frequently based on the situation and environment, especially when alcohol is present (Steele & Josephs, 1990).

Social Anxiety and Problematic Drinking

Social anxiety and problematic drinking are among the most common disorders present in the college population. Randall, Thomas, and Thevos (2001) found that approximately one-fifth of individuals with social anxiety also had a comorbid substance use disorder. The current study examined the relationship between social anxiety and problematic drinking (i.e., alcohol consumption and dependency symptoms) as mediated by emotion regulation difficulties, drinking motives, alcohol outcome expectancies in social situations, and self-discrepancy.

Because social anxiety and problematic drinking were found to be unrelated to one another in the current study, we examined problematic drinking based on the measures’ subscales of alcohol consumption and dependency symptoms. Emotion regulation difficulties did not mediate the relationship between social anxiety and alcohol consumption; however, emotion regulation difficulties partially mediated the relationship between social anxiety and dependency symptoms. The emotion regulation difficulties subscales did not mediate these two relationships. To our knowledge, only one study has examined emotion regulation difficulties as a mediator. Veilleux, Skinner, Reese, and
Shaver (2014) found the emotion regulation subscales of lack of emotional clarity and limited access to emotion regulation strategies partially mediated the relationship between negative intensity (including anxiety) and hazardous drinking. Although the variables used in that study were similar to those used in the current study, we are unable to compare results properly for generalization purposes. Based on our findings, individuals with higher social anxiety scores experienced greater dependency symptoms when having difficulties regulating their emotions. As research is limited in this area, our study’s findings extend what is currently known.

Next, we examined the relationship between social anxiety and alcohol consumption as mediated by drinking motives. Drinking motives did not mediate this relationship; likewise, drinking motives did not mediate the relationship between social anxiety and dependency symptoms. These findings did not match previous research. Clerkin, Werntz, Magee, Lindgren, and Teachman (2014) found that drinking motives mediated the relationship between social anxiety and problematic drinking in emerging adults (i.e., ages 18-25). These findings may vary from the current study’s results due to several factors. First, they used a different problematic drinking measure than what was used in the current study. Second, they examined all individuals in the 18 to 25 year age range whereas we examined college students specifically. Finally, subscales for problematic drinking may not be comparable to those found for the overall problematic drinking score.

We did not find a relationship between social anxiety and alcohol consumption as mediated by alcohol outcome expectancies in social situations. We also did not find a relationship between social anxiety and dependency symptoms as mediated by alcohol
outcome expectancies in social situations. The current study’s findings were similar to those found in Eggleston, Woolaway-Bickel, and Schmidt (2004), where alcohol outcome expectancies did not mediate the relationship between social anxiety and problematic drinking. Most studies that have used the variables of social anxiety, alcohol outcome expectancies, and problematic drinking used moderation instead of mediation. For example, Ham, Zamboanga, and Bacon (2011) found positive alcohol expectancies to moderate the relationship between social anxiety and problematic drinking. Therefore, this relationship may be tested better through moderation instead of mediation.

Finally, we examined the relationship between social anxiety and alcohol consumption as mediated by self-discrepancy. Self-discrepancy did not mediate this relationship. We also did not find self-discrepancy to mediate the relationship between social anxiety and dependency symptoms. To our knowledge, no research has examined self-discrepancy as a mediator to social anxiety and problematic drinking. A possible explanation for a lack of this mediation is that self-discrepancy was related more to social anxiety than to problematic drinking. Self-discrepancy may precede social anxiety, which is why it may not have a strong relationship with problematic drinking.

Limitations and Future Directions

The present study was limited by diversity, age, and administration error. The majority of participants reported being Caucasian, which limits this study in terms of diversity. Future research should focus on a more diverse population, both in ethnicity and location. Thus, results could help determine whether certain groups are more at risk than others are to social anxiety and problematic drinking.
The college-aged population is important to study when it comes to social anxiety and alcohol use due to the high prevalence rates found in this population. It would also be important to study different age groups, as well as non-college students of the same age, to see why this difference is present.

Finally, the self-discrepancy measure used in the current study was administered incorrectly during data collection. The participants were asked to answer two questions instead of one, as presented in the ISDI. Of the two questions administered, the second question presented was similar to that of the ISDI. Due to these similarities, this question was used for analysis purposes and reverse scored due to the Likert scale being inversely related to the Likert scale administered in the ISDI. Due to this error, it is possible that the results involving the variable self-discrepancy are inaccurate. It is unlikely that the results would change due to the similarities in the questions, but the results would be more accurate if the measure were administered correctly.

Future research could examine what other variables may influence the relationship between social anxiety and problematic drinking in college students. The present study found emotion regulation difficulties to account for only 11% of the variance toward the relationship between social anxiety and problematic drinking, suggesting that other factors play a role as well. Some examples are fear of negative and positive evaluation in social situations, protective behavioral strategies, environment, and individual differences. Previous research has examined several of the variables used in the current study using moderation instead of mediation. Therefore, future research is needed to evaluate the generalizability of results as well as test for moderation to see if
any of these variables influence the relationship between social anxiety and alcohol use in college students.

**Clinical Implications**

Social anxiety and problematic drinking are among the disorders most commonly present in the college population. Therefore, it is important to examine why they are so often comorbid in college students. Examining and understanding the factors that cause this relationship can lead to the development of treatment and prevention programs. These findings could help identify students at risk for developing problematic drinking.

Based on current findings, it appears that individuals with higher levels of social anxiety symptoms depend on alcohol more in social situations because they have greater difficulties regulating their emotions. Targeting emotion regulation strategies in treatment for college students with social anxiety could help prevent alcohol use.
References


center samples in north India. *Journal of Studies on Alcohol, 65*, 794-800.


Where's the house party? Hazardous drinking behaviors and related risk factors.

*Journal of Psychology, 143*, 228-244. doi:10.3200/JRLP.143.3.228-244
Table 1

**Descriptive Statistics**

<table>
<thead>
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<th>SD</th>
<th>Min</th>
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</table>

*Note: SIAS = Social Interaction Anxiety Scale; AUDIT = Alcohol Use Disorder Identification Test; DERS = Difficulties in Regulating Emotion Scale; AESES = Alcohol Expectancies in Social Evaluative Situations Scale; DMQ-R = Drinking Motives Questionnaire-Revised; ISDI = Integrated Self-Discrepancy Index.*
Table 2

Zero-Order Correlations Between Main Study Variables

<table>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
</tbody>
</table>

Note. SIAS = Social Interaction Anxiety Scale; AUDIT = Alcohol Use Disorder Identification Test; DERS = Difficulties in Emotion Regulation Scale; AESES = Alcohol Expectancies in Social Situations Scale; DMQ-R = Drinking Motives Questionnaire-Revised; ISDI = Integrated Self-Discrepancy Index

**p < .01, ***p < .001
Table 3

Regression Analysis Summary for Social Anxiety Predicting Alcohol Consumption as Mediated by Emotion Regulation Difficulties, Alcohol Outcome Expectancies, Drinking Motives, and Self-Discrepancy

<table>
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<tr>
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<th>$\beta$</th>
<th>$T$</th>
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<td>.13</td>
</tr>
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<td>.16</td>
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<td>.005</td>
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<td>.01</td>
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</tr>
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<td>SD $\rightarrow$ AC</td>
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<td>.34</td>
<td>-.06</td>
<td>-.81</td>
<td>.42</td>
</tr>
</tbody>
</table>

Note. SA = Social Anxiety; AC = Alcohol Consumption; ERD = Emotion Regulation Difficulties; AOE = Alcohol Outcome Expectancies; DM = Drinking Motives; SD = Self-Discrepancy.
Table 4

Regression Analysis Summary for Social Anxiety Predicting Alcohol Dependence as Mediated by Emotion Regulation Difficulties, Alcohol Outcome Expectancies, Drinking Motives, and Self-Discrepancy

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<th>p</th>
</tr>
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<td>.47</td>
<td>5.56</td>
<td>.001</td>
</tr>
<tr>
<td>SA → AOE</td>
<td>.12</td>
<td>.07</td>
<td>.15</td>
<td>1.54</td>
<td>.13</td>
</tr>
<tr>
<td>SA → DM</td>
<td>.01</td>
<td>.01</td>
<td>.14</td>
<td>1.43</td>
<td>.16</td>
</tr>
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<tr>
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<tr>
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</tr>
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<td>.44</td>
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</table>

Note. SA = Social Anxiety; AC = Alcohol Consumption; ERD = Emotion Regulation Difficulties; AOE = Alcohol Outcome Expectancies; DM = Drinking Motives; SD = Self-Discrepancy.
Table 5

*Regression Analysis for Social Anxiety Predicting Alcohol Consumption as Mediated by Emotion Regulation Difficulties Subscales, Alcohol Outcome Expectancies, Drinking Motives, and Self-Discrepancy*

<table>
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<tr>
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</tr>
<tr>
<td>SA → I</td>
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</tr>
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</tr>
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<td>.45</td>
<td>5.02</td>
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</tr>
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</table>

*Note. SA = Social Anxiety; AC = Alcohol Consumption; AOE = Alcohol Outcome Expectancies; DM = Drinking Motives; SD = Self-Discrepancy; N = Nonacceptance; G = Goals; I = Impulse; A = Awareness; S = Strategies; C = Clarity.*
Table 6

Regression Analysis for Social Anxiety Predicting Alcohol Dependence as Mediated by Emotion Regulation Difficulties Subscales, Alcohol Outcome Expectancies, Drinking Motives, and Self-Discrepancy

<table>
<thead>
<tr>
<th>Variable</th>
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<td>-.85</td>
<td>.40</td>
</tr>
<tr>
<td>N → AD</td>
<td>.05</td>
<td>.04</td>
<td>.21</td>
<td>1.31</td>
<td>.19</td>
</tr>
<tr>
<td>G → AD</td>
<td>-.05</td>
<td>.04</td>
<td>-.15</td>
<td>-1.13</td>
<td>.26</td>
</tr>
<tr>
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<td>.06</td>
<td>.04</td>
<td>.19</td>
<td>1.35</td>
<td>.18</td>
</tr>
<tr>
<td>A → AD</td>
<td>-.002</td>
<td>.04</td>
<td>-.01</td>
<td>-.04</td>
<td>.96</td>
</tr>
<tr>
<td>S → AD</td>
<td>-.04</td>
<td>.04</td>
<td>-.18</td>
<td>-1.05</td>
<td>.30</td>
</tr>
<tr>
<td>C → AD</td>
<td>.08</td>
<td>.06</td>
<td>.20</td>
<td>1.34</td>
<td>.18</td>
</tr>
</tbody>
</table>

Note. SA = Social Anxiety; AC = Alcohol Consumption; AOE = Alcohol Outcome Expectancies; DM = Drinking Motives; SD = Self-Discrepancy; N = Nonacceptance; G = Goals; I = Impulse; A = Awareness; S = Strategies; C = Clarity.
Figure 1. A parallel mediation model depicting the relationship between social anxiety (SIAS) and problematic drinking (AUDIT) as mediated by (1) emotion regulation difficulties (DERS), (2) alcohol outcome expectancies (AESES), (3) drinking motives (DMQ-R), and (4) self-discrepancy (ISDI). The “+” symbol between variables represents the prediction of a positive relationship.
Figure 2. A parallel mediation model depicting the relationship between social anxiety (SIAS) and alcohol consumption (AUDIT subscale) as mediated by (1) emotion regulation difficulties (DERS), (2) alcohol outcome expectancies (AESES), (3) drinking motives (DMQ-R), and (4) self-discrepancy (ISDI).

*p < .05, **p < .01, ***p < .001
Figure 3. A parallel mediation model depicting the relationship between social anxiety (SIAS) and alcohol dependence (AUDIT subscale) as mediated by (1) emotion regulation difficulties (DERS), (2) alcohol outcome expectancies (AESES), (3) drinking motives (DMQ-R), and (4) self-discrepancy (ISDI).

*p < .05, **p < .01, ***p < .001
Figure 4. A parallel mediation model depicting the relationship between social anxiety (SIAS) and alcohol consumption (AUDIT subscale) as mediated by the emotion regulation difficulties (DERS) subscales of (1) nonacceptance, (2) goals, (3) impulse, (4) awareness, (5) strategies, and (6) clarity; (7) alcohol outcome expectancies (AESES); (8) drinking motives (DMQ-R); and (9) self-discrepancy (ISDI).

*p < .05, **p < .01, ***p < .001
Nonacceptance

Goals

Impulse

Awareness

Strategies

Social Anxiety

Clarity

Alcohol Outcome Expectancies

Drinking Motives

Self-Discrepancy

Alcohol Dependence
Figure 5. A parallel mediation model depicting the relationship between social anxiety (SIAS) and alcohol dependence (AUDIT subscale) as mediated by the emotion regulation difficulties (DERS) subscales of (1) nonacceptance, (2) goals, (3) impulse, (4) awareness, (5) strategies, and (6) clarity; (7) alcohol outcome expectancies (AESES); (8) drinking motives (DMQ-R); and (9) self-discrepancy (ISDI).

*p < .05, **p < .01, ***p < .001
Appendix A

CONSENT TO PARTICIPATE IN RESEARCH

Drinking and Emotions

You are invited to participate in a research study conducted by Carissa Gutsmiedl, B.S. and Wesley D. Allan, Ph.D., from the Psychology Department at Eastern Illinois University. Your participation in this study is entirely voluntary.

PURPOSE OF THE STUDY
This study examines student drinking behaviors as well as their related emotions.

PROCEDURE
If you volunteer to participate in this study:
You will be asked to read an informed consent form. If you agree to participate in this study, then you will complete several online measures about different feelings, experiences, and thoughts in different situations/circumstances. After completing these measures, you will receive a printable debriefing form, which explains the study and provides you with the contact information of the investigators, who you may contact if you have any questions about the study. The total length of participation will be approximately 30 minutes.

POTENTIAL RISK AND DISCOMFORTS
There are no foreseeable risks or discomforts beyond those involved in a typical psychological study. If you become upset while participating in the research, you may skip any question that upsets you or withdraw from participation without penalty.

POTENTIAL BENEFITS TO SUBJECTS OR TO SOCIETY
For your participation, you will receive one hour of subject pool credit that partially fulfills course requirements of your Introductory to Psychology course. Also, the results of the study will help us gain a better understanding of why the relationship between social anxiety and problematic drinking in college students is higher than any other age group and may ultimately contribute to the development of programs to help college students reduce the amount social anxiety symptoms and problematic drinking experienced.

INCENTIVES FOR PARTICIPATION
Participants will receive course credit for participation in this study.

CONFIDENTIALITY
Any information obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Each individual’s responses will be assigned an identification number, and names will not be connected to the questionnaires. Only the principle investigator
and co-investigator will have access to data files. Data will be kept for at least five years following the final publication of material from this dataset.

**PARTICIPATION AND WITHDRAWAL**

Participation in this research study is voluntary and not a requirement of a condition for being the recipient of benefits or services from Eastern Illinois University. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind or loss of benefits or services to which you are otherwise entitled. You may also refuse to answer any questions you do not want to answer.

**IDENTIFICATION OF INVESTIGATORS**

If you have any questions or concerns about this research, please contact:

- Carissa Gutsmiedl, B.S. (cmgutsmiedl@eiu.edu)
- Wesley D. Allan, Ph.D. (Psychology Department Faculty Sponsor: 217-581-6611; wallan@eiu.edu)

**RIGHTS OF RESEARCH SUBJECTS**

If you have any questions or concerns about the treatment of human participants in this study, you may call or write:

Institutional Review Board  
Eastern Illinois University  
600 Lincoln Ave.  
Charleston, IL 61920  
Telephone: (217) 581-8576  
E-mail: eiuirb@www.eiu.edu

You will be given the opportunity to discuss any questions about your rights as a research subject with a member of the IRB. The IRB is an independent committee composed of members of the University community, as well as lay members of the community not connected with EIU. The IRB has reviewed and approved this study.

---

I voluntarily agree to participate in this study. I understand that I am free to withdraw my consent and discontinue my participation at any time. I can print a copy of this form for my records. By clicking continue, you have agreed to participate in this study.
Appendix B
Demographics Form

In order for us to collect background information on participants, you will answer a series of demographic questions. Please answer them appropriately.

What is your biological sex?

- Male
- Female

What is your current age?


What year in school are you in?

- Freshman
- Sophomore
- Junior
- Senior
- Other

What is your current Major?


What is your race/ethnicity?


In the past 6 months, what is the largest number of drinks you have had in any 2-hour period?

(A standard drink is 1.5 oz. of hard liquor, 5 oz. wine, or 12 oz. beer)


When was the last time you consumed alcohol? (It can be in hours, days, weeks, months etc.; please specify)


How many drinks did you consume the last time you drank alcohol?


Appendix C

Social Interaction Anxiety Scale (SIAS)

**Instructions:** For each item, please circle the number to indicate the degree to which you feel the statement is characteristic or true for you. The rating scale is as follows:

- 0 = **Not at all** characteristic or true of me.
- 1 = **Slightly** characteristic or true of me.
- 2 = **Moderately** characteristic or true of me.
- 3 = **Very** characteristic or true of me.
- 4 = **Extremely** characteristic or true of me.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Not at All</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Very</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I get nervous if I have to speak with someone in authority (teacher, boss, etc.)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. I have difficulty making eye contact with others</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. I become tense if I have to talk about myself or my feelings</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I find it difficult to mix comfortably with the people I work with</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. I find it easy to make friends my own age</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. I tense up if I meet an acquaintance in the street</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. When mixing socially, I am uncomfortable</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. I feel tense if I am alone with just one other person</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. I am at ease meeting people at parties, etc.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. I have difficulty talking with other people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. I find it easy to think of things to talk about</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. I worry about expressing myself in case I appear awkward</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. I find it difficult to disagree with another's point of view</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. I have difficulty talking to attractive persons of the opposite sex</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. I find myself worrying that I won't know what to say in social situations</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. I am nervous mixing with people I don't know well</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. I feel I'll say something embarrassing when talking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. When mixing in a group, I find myself worrying I will be ignored</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. I am tense mixing in a group</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. I am unsure whether to greet someone I know only slightly</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Appendix D

Alcohol Use Disorder Identification Test (AUDIT)

Now I am going to ask you some questions about your use of alcoholic beverages during this past year (A standard drink is 1.5 oz. hard liquor, 5 oz. wine, and 12 oz. beer).

1. How often do you have a drink containing alcohol?
   (0) Never [Skip to Qs 9-10]
   (1) Monthly or less
   (2) 2 to 4 times a month
   (3) 2 to 3 times a week
   (4) 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   (0) 1 or 2
   (1) 3 or 4
   (2) 5 or 6
   (3) 7, 8, or 9
   (4) 10 or more

3. How often do you have six or more drinks on one occasion?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

Skip to questions 9 and 10 if total Score for Questions 2 and 3 = 0

4. How often during the last year have you found that you were not able to stop drinking once you have started?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?
   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?
   (0) No
   (1) Yes, but not in the last year
   (2) Yes, during the last year

10. Has a relative or friend or doctor or another health worker been concerned about your drinking or suggested you cut down?
    (0) No
    (1) Yes, but not in the last year
    (2) Yes, during the last year
Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

Almost never Sometimes About half the time Most of the time Almost always
(0-10%) (11-35%) (36-65%) (66-90%) (91-100%)

1. I am clear about my feelings.
2. I pay attention to how I feel.
3. I experience my emotions as overwhelming and out of control.
4. I have no idea how I am feeling.
5. I have difficulty making sense out of my feelings.
6. I am attentive to my feelings.
7. I know exactly how I am feeling.
8. I care about what I am feeling.
9. I am confused about how I feel.
10. When I’m upset, I acknowledge my emotions.
11. When I’m upset, I become angry with myself for feeling that way.
12. When I’m upset, I become embarrassed for feeling that way.
13. When I’m upset, I have difficulty getting work done.
14. When I’m upset, I become out of control.
15. When I’m upset, I believe that I will remain that way for a long time.
16. When I’m upset, I believe that I will end up feeling very depressed.
17. When I’m upset, I believe that my feelings are valid and important.
18. When I’m upset, I have difficulty focusing on other things.
19. When I’m upset, I feel out of control.
20. When I’m upset, I can still get things done.
21. When I’m upset, I feel ashamed at myself for feeling that way.
22. When I’m upset, I know that I can find a way to eventually feel better.
23. When I’m upset, I feel like I am weak.
24. When I’m upset, I feel like I can remain in control of my behaviors.
25. When I’m upset, I feel guilty for feeling that way.
26. When I’m upset, I have difficulty concentrating.
27. When I’m upset, I have difficulty controlling my behaviors.
28. When I’m upset, I believe there is nothing I can do to make myself feel better.
29. When I’m upset, I become irritated at myself for feeling that way.
30. When I’m upset, I start to feel very bad about myself.
31. When I’m upset, I believe that wallowing in it is all I can do.
32. When I’m upset, I lose control over my behavior.
33. When I’m upset, I have difficulty thinking about anything else.
34. When I’m upset, I take time to figure out what I’m really feeling.
35. When I’m upset, it takes me a long time to feel better.
36. When I’m upset, my emotions feel overwhelming.
Appendix F

Alcohol Expectancies for Social Evaluative Situations Scale (AESES)

Directions: This is a questionnaire of your perceptions about the effects of alcohol. Please read each statement carefully and then rate the degree to which the effect is “true” for you using the scale below. When the statements mention “drinking alcohol,” or just “drinks,” this refers to any alcoholic beverage such as beer, wine, whiskey, gin, vodka, wine coolers, and any type of regular or sweet mixed drink. Regardless of the amount of your actual drinking experience, please answer according to what you believe the effect is or would be for you.

Please rate all of the items using the following key:

1 = Not at all true
2 = A little true
3 = Somewhat true
4 = Frequently true
5 = Very much true

1. I don’t worry as much about what people are thinking about me when I am drinking.
2. When I am drinking, it doesn’t bother me as much if people are looking at me.
3. When I am drinking alcohol, I feel freer to be myself and do whatever I want.
4. It is easier to start a conversation with someone if I have had a few drinks
5. I feel more comfortable in a large group situation when I am drinking.
6. I think less about saying or doing something embarrassing in front of others when I have a few drinks.
7. After a few drinks, I feel more confident when telephoning someone.
8. I think less about what others might think about my physical appearance when I’ve had a few drinks.
9. After I have a few drinks, I feel more comfortable talking to people.
10. After a few drinks, I feel more at ease when talking to someone.
Appendix G

Drinking Motives Questionnaire-Revised (DMQ-R)

**Instructions:**
Listed below are 20 reasons people might be inclined to drink alcoholic beverages. Using the five-point scale below, decide how frequently your own drinking is motivated by each of the reasons listed.

**YOU DRINK...**

<table>
<thead>
<tr>
<th>Item</th>
<th>Almost Never/Never</th>
<th>Some of the Time</th>
<th>Half of the Time</th>
<th>Most of the Time</th>
<th>Almost Always/Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>To forget about your problems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To be social</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because you like the feeling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>So that others won't kid you about not drinking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To fit in with a group you like</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because it's exciting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because it gives you a pleasant feeling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because your friends pressure you to drink</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To get high</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because it makes social gatherings more fun</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because it improves parties and celebrations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To cheer up when you are in a bad mood</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To be liked</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To forget your worries</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because it's fun</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>So you won’t feel left out</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because you feel more self-confident and sure of yourself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because it helps you enjoy a party</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Because it helps you when you feel depressed or nervous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>To celebrate a special occasion with friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix H

Integrated Self-Discrepancy Index (ISDI)

<table>
<thead>
<tr>
<th>Cultured</th>
<th>Competent</th>
<th>Helpful</th>
<th>Erudite</th>
<th>Ambitious</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artistic</td>
<td>Candid</td>
<td>Obedient</td>
<td>Adventurous</td>
<td>Forgiving</td>
</tr>
<tr>
<td>Creative</td>
<td>Self-sufficient</td>
<td>Respectful</td>
<td>Responsible</td>
<td>Upright</td>
</tr>
<tr>
<td>Kind</td>
<td>Perfectionistic</td>
<td>Discriminating</td>
<td>Rational</td>
<td>Entertaining</td>
</tr>
<tr>
<td>Witty</td>
<td>Good-Humored</td>
<td>Clever</td>
<td>Earmest</td>
<td>Warm</td>
</tr>
<tr>
<td>Inquisitive</td>
<td>Quick</td>
<td>Wise</td>
<td>Sentimental</td>
<td>Aggressive</td>
</tr>
<tr>
<td>Gentle</td>
<td>Brilliant</td>
<td>Careful</td>
<td>Considerate</td>
<td>Well-mannered</td>
</tr>
<tr>
<td>Cheerful</td>
<td>Enthusiastic</td>
<td>Amiable</td>
<td>Friendly</td>
<td>Popular</td>
</tr>
<tr>
<td>Persuasive</td>
<td>Trustworthy</td>
<td>Reasonable</td>
<td>Understanding</td>
<td>Consistent</td>
</tr>
<tr>
<td>Humble</td>
<td>Admirable</td>
<td>Thorough</td>
<td>Intelligent</td>
<td>Optimistic</td>
</tr>
<tr>
<td>Self-possessed</td>
<td>High-Spirited</td>
<td>Relaxed</td>
<td>Mature</td>
<td>Moral</td>
</tr>
<tr>
<td>Punctual</td>
<td>Valuable</td>
<td>Gracious</td>
<td>Independent</td>
<td>Skilled</td>
</tr>
</tbody>
</table>

Direction: Please list five traits that your significant person believes you SHOULD or OUGHT to be. You can use any adjective to answer; you can also use the list of words listed above.

For Example: “My father thinks I should be a moral person.”

Each of the traits you have listed, indicate how much you think each of the words ACTUALLY describes or applies to you at this time.
Appendix I

DEBRIEFING

Thank you very much for participating in this study. The purpose of this study is to examine the relationship between social anxiety and problematic drinking in college students, with emotion regulation difficulties, drinking motives, alcohol outcome expectancies, and discrepancies as being potential explanations for this relationship. Your responses to the questions in this study will be very useful for helping to determine the potential reasons why social anxiety and problematic drinking are higher in the college-aged population than any other age group.

Again, we would like to thank you for participating in this study. Please do not discuss this study with other people in the Introduction to Psychology courses who have no yet participated in our study. If you have questions, or would like to know more about the study, please feel free to contact us: Carissa Gutsmiedl, B.S. (cmgutsmiedl@eiu.edu) or Wesley D. Allan, Ph.D. (faculty sponsor), Department of Psychology, Eastern Illinois University (wallan@eiu.edu, 217-581-6611). The study was conducted in fulfillment of requirements of Ms. Gutsmiedl’s Master’s Thesis.

You answered questions that may cause you to think about situations that cause anxiety, alcohol use, drinking motives, alcohol outcome expectancies, and discrepancies. If you find that you are concerned and would like someone outside this study to talk to about these feelings, you can contact one of the numbers below:

➢ EIU Counseling Center: 217-581-3413
➢ Life Links: 217-238-5700