

Social Anxiety and Alcohol Use: The Contributing Factors

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PSYC 4283: Advanced Seminar

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May 3, 2023

Abstract

Anxiety disorders are commonly comorbid with substance use disorders, one relationship frequently researched in this topic is social anxiety disorder and alcohol use disorder. These two disorders have not always had a consistent body of evidence supporting their relationship and the literature gets even more complicated when examining what may influence their relationship. This review aimed to first clarify what is the relationship between social anxiety and problematic alcohol use. Then, this review examines three of the most frequently referenced variables that have evidence to support their ability to predict drinking behavior in those with social anxiety. These factors were alcohol expectancies, drinking motives, and social environments. Social anxiety was found to be associated with alcohol-related problems, regardless of the quantity or frequency of drinking (Ham et al., 2015; Buckner et al., 2006; Goldsmith et al., 2012). Next, this review found support for specifically positive alcohol expectancies being associated with alcohol-related problems and alcohol consumption. Only support for enhancement drinking motives was found to be associated with increased alcohol consumption. Finally, social environments, particularly ones that cause social fear, seemed to impact drinking behavior for those with social anxiety. Overarching limitations such as non-clinical samples, cross-sectional data, and non-diverse participant demographics were discussed and considered when presenting ways this body of research can be improved in future studies.

Keywords: Social anxiety, alcohol use, drinking motives, alcohol expectancies, substance use disorder

Social Anxiety and Alcohol Use: The Contributing Factors

Anxiety disorders have long been found to be associated with varying substance use disorders. One of those topics still continually being researched is particularly social anxiety's relationship to alcohol use. Social anxiety disorder is characterized by continual fear and avoidance of social situations that may elicit judgment from others (Schneier & Goldmark, 2015). The physical and psychological symptoms of anxiety may put those with social anxiety at more risk of using substances to alleviate those symptoms. The National Epidemiologic Survey on Alcohol and Related Conditions noted that "48% of individuals with a lifetime social anxiety diagnosis also meet the criteria for a lifetime alcohol use disorder" (Buckner & Turner, 2009). For many individuals with social anxiety, their diagnosis is then a risk factor for developing subsequent alcohol use, but some contradicting research exists. Some individuals with social anxiety will avoid alcohol for fear of embarrassment from intoxication, turning social anxiety into a protective factor against alcohol use (Meade Eggleston et al., 2004). These contradictory findings have led researchers to question what individual differences influence the relationship between social anxiety and alcohol use. Individual differences could explain why some individuals with social anxiety face more alcohol-related problems while others are protected from their social fear. One body of research with various findings on its relation to social anxiety and alcohol use is on alcohol expectancies.

Alcohol outcome expectancies are the beliefs one holds about the effects of consuming alcohol (Smit et al., 2018). In other words, alcohol expectancies are the anticipated consequences, whether positive or negative, you hold about alcohol. Positive alcohol expectancies would encompass beliefs such as "alcohol helps me reduce stress" while negative expectancies describe thoughts like "alcohol makes me vulnerable" (Ham et al., 2015). Beliefs

about alcohol's effects have been found to trigger anticipatory responses in settings where alcohol is being consumed, so they may help predict subsequent drinking behavior (Smit et al., 2018). Looking then at alcohol expectancies that are endorsed by those with social anxiety could help explain the contradicting findings. It may be expected that someone with social anxiety who endorses more positive beliefs about the effects of alcohol may be at greater risk of experiencing alcohol-related problems than someone who holds more negative beliefs. In this paper, articles with similar hypotheses and other variations will be discussed in their efforts to explain social anxiety and alcohol use's relationship.

Another factor that has been researched because of its promising effects on the relationship between social anxiety and alcohol use is drinking motives. Drinking motives are essentially the reasons/motives behind why someone chooses to consume alcohol (Buckner et al., 2006). These may have a more proximal effect on social anxiety and alcohol use because it measures exactly why someone chooses to drink rather than alcohol expectancies which just describe beliefs about outcomes. Three distinct types of drinking motives have been the focus of current research which include enhancement-motivated drinking, coping-motivated drinking, and socially-motivated drinking among those with social anxiety (Buckner et al., 2006). In accordance with the tension-reduction model that states alcohol reduces tension and that individuals will consume alcohol to reduce tension, many researchers believe those with social anxiety may endorse more coping and enhancement drinking motives. (Kidorf & Lang, 1999). Results of this research and how well drinking motives predict drinking behaviors in those with social anxiety will be discussed.

Lastly, a factor that has lots of evidence supporting its effects on the relationship between social anxiety and alcohol use is the social environment. Once a socially anxious individual

decides to include themselves in a social environment, the type of social setting it is can have major effects on drinking behavior. As social anxiety is characterized by a fear of social evaluation, situations that elicit that feeling, such as giving a speech or being in conflict with others have been identified as possible harmful scenarios for those with social anxiety (Buckner et al., 2006). Alcohol consumption is also knowingly attached to many social events young adults and adults go to. Looking into the types of social scenarios that socially anxious individuals put themselves in might aid in explaining their drinking behaviors and may help guide treatment plans in clinical settings.

Methods

The selection of these articles was made using the University of Arkansas Library's OneSearch, EBSCO, Google Scholar, and PubMed focusing on articles with the keywords: social anxiety, alcohol use, substance use disorder, alcohol expectancies, and drinking motives. All articles that were used met the criteria of being peer-reviewed, in English, and were all less than 25 years old. Given that the college student population remains of particular interest for increased alcohol use, studies that focused on younger adults were given particular consideration, but all were considered. Studies that focused on social anxiety were particularly relevant to this review but generalized anxiety in relation to alcohol use was also utilized in forming overall findings.

Literature Review

Alcohol Expectancies

Many factors contributing to the social anxiety and alcohol use relationship have been researched, and many study findings are consistent with the tension reduction model that states those with higher anxiety will drink to alleviate anxiety symptoms (Conger, 1956). This should

mean that those with social anxiety would more likely drink in situations where social anxiety is felt. However, some research shows that social anxiety may serve as a protective factor against alcohol use disorder (Meade Eggleston et al., 2004). Meade Eggleston and colleagues (2004) noted that individual differences in alcohol expectancies might be the cause of this inconsistent research. In their study, they measured the positive and negative alcohol expectancies that are endorsed by socially anxious individuals. They evaluated whether those alcohol outcome expectancies moderated and/or mediated the relationship between social anxiety and alcohol use. Meade Eggleston and colleagues (2004) hypothesized that there would be a mediational effect of alcohol expectancies on the relationship between social anxiety and alcohol use. Therefore hypothesizing that socially anxious individuals only drink or do not drink due to their alcohol expectancies. Their sample study consisted of 284 undergraduates who did not consider themselves abstainers from alcohol. The participants completed self-report measures that measured social interaction anxiety, positive and negative alcohol expectancies, and the degree to which the participants endorse those expectancies for social facilitation, alcohol consumption, and alcohol-related problems.

What the researchers first found was that higher levels of social anxiety were not significantly related to alcohol-related problems and instead were significantly predictive of reduced frequency, and lower quantities of alcohol consumption (Meade Eggleston et al., 2004). Next, they found that the interaction between social anxiety and positive and negative expectancies did not predict any drinking-related measure, so no moderation effect was found. Researchers discovered that higher levels of social anxiety were predictive of higher positive and negative alcohol expectancies. Positive alcohol outcome expectancies were predictive of increased alcohol consumption, but negative expectancies were not found to predict alcohol

consumption. The mediational effects of both alcohol expectancies could not be established. These findings suggest that socially anxious individuals may endorse more avoidant behaviors that reduce alcohol consumption and related problems than they do use alcohol to reduce tension or stress. Even though positive alcohol expectancies should be considered an important factor in influencing social anxiety's relationship to alcohol use, Meade Eggleston and colleagues (2004) consider that avoidance behaviors might be a stronger predictor of drinking behaviors. If someone who has social anxiety chooses to not participate in social situations where alcohol could be present, then their alcohol consumption would not be affected by their alcohol expectancies. On the other hand, a socially anxious individual who does not avoid social situations might be more at risk for the negative effects of positive alcohol expectancies.

A few limitations of this current study open possibilities for future research avenues. As with this study and others in this area of research, their study did not use diagnostic measures or a clinical sample. This limits the ability of this research to generalize to those with full social anxiety diagnosis but is still beneficial to a wider array of research that looks at trait-anxious individuals and their issues with alcohol use. Generalizability is also limited by the participants identifying mainly as Caucasian (86%) and their employment status (Meade Eggleston et al., 2004). According to the study, many of the participants lived on campus and the drinking habits of college populations are known to diverge from average populations. The results of this study brought up another concern for researchers as they do not reflect the tension-reduction model of drinking or the self-presentation model of shyness they were hypothesizing. Participants did not fully display coping mechanisms of drinking or a full avoidance of alcohol in fear of social evaluation like the models predict. This suggests a more complicated relationship between alcohol expectancies, social anxiety, and alcohol use that could be looked at more in the future.

One subject not completely explored even given their considerable comorbidity is the relationship and contributing factors of generalized anxiety disorder and alcohol use disorder. Contradicting research about the onset of GAD and AUD in comorbid cases and the ability for alcohol withdrawal to appear similar to GAD symptoms has limited past research (Goldsmith et al., 2012). Generalized anxiety symptoms are known to increase the risk of alcohol-related problems, therefore, comorbid cases put this particular population at a higher risk (Goldsmith et al., 2012). Noticing a lack of research, Goldsmith and colleagues (2012) decided to set up a study that looked at the interrelationships of factors that may be motivating those with generalized anxiety symptoms to drink. Their study aimed to measure the extent to which generalized anxiety, tension-reduction alcohol expectancies, and drink refusal self-efficacy simultaneously predict alcohol consumption and alcohol-related consequences in young adult college drinkers (Goldsmith et al., 2012). Given that past research suggests the importance of the ability to successfully refuse an alcoholic beverage, better known as drinking refusal self-efficacy, in relation to social anxiety and alcohol-related problems, Goldsmith and colleagues (2012) wanted to be the first to test its role in alcohol outcomes with those having generalized anxiety symptoms. It was hypothesized that individuals with high generalized anxiety, high tension-reduction alcohol expectancies, and low drinking refusal self-efficacy would show greater alcohol-related consequences and alcohol consumption than individuals with low generalized anxiety. Their study consisted of 474 participants, ages 18 to 25, from a large, urban Midwestern university who took self-report assessment batteries in groups of up to 25. The self-report assessments measured generalized anxiety symptoms, drinking behaviors, drinking refusal self-efficacy, and tension-reduction alcohol expectancies (Goldsmith et al., 2012).

Goldsmith et al. (2012) found that generalized anxiety levels did, in fact, interact with tension-reduction alcohol expectancies to predict alcohol-related problems and alcohol consumption, these interactions varied as a result of participants drinking refusal self-efficacy. Individuals with high drinking refusal self-efficacy reported the lowest amounts of alcohol consumption and alcohol-related consequences while those with low drinking refusal self-efficacy reported the highest levels of consumption and consequences (Goldsmith et al., 2012). Among those with low drinking refusal self-efficacy, high generalized anxiety participants with high tension-reduction expectancies reported greater alcohol-related consequences but lower alcohol consumption than low generalized anxiety individuals with high tension reduction expectancies (Goldsmith et al., 2012). High generalized anxiety itself seemed to serve as a protective factor against consuming alcohol but not against alcohol-related consequences. These results provide support for putting more focus on assessing and researching drinking refusal self-efficacy and tension-reduction alcohol expectancies effects on drinking behavior for those with generalized anxiety (Goldsmith et al., 2012). Findings also show that alcohol-related consequences can still be present and even be at high levels for those with GAD who do not report high alcohol consumption.

Limitations of this study first include that the participants reported being primarily Caucasian and were all young adults from an urban midwestern university. More diverse populations or individuals that aren't students may display different drinking behaviors or generalized anxiety symptoms than the sample used. Second, this study used a non-clinical sample so the results may not generalize to those who display more severe symptoms. It is important to consider though that there is a large population out there that does not meet full GAD or AUD criteria that can benefit from this information. The extent to which someone

believes they can refuse a drink and their beliefs about alcohol reducing tension are key factors Goldsmith and colleagues found new evidence for and believe need to be researched more in their relation to generalized anxiety disorder and alcohol use disorder.

Alcohol expectancies, particularly tension-reduction expectancies, have been a focal point of research in the relationship between social anxiety and alcohol use. Popular models such as the tension-reduction hypothesis seem to offer a simple explanation for drinking behavior but supporting evidence for it isn't as straightforward. One matter that is more transparent in its effects has been the social environment because this factor characterizes a major stressor for someone with social anxiety. Kidorf & Lang (1999) in their study wanted to utilize past research that supports alcohol expectancies, social anxiety, social situations, and alcohol use's relationship while exploring more factors that might clear up past research ambiguity. The main goal of their study was to examine how well social anxiety, alcohol expectancies, and gender could predict alcohol consumption in participants who are anticipating a self-disclosing speech (Kidorf & Lang, 1999). This within-subjects design included 42 male and 42 female participants who were screened for conflicting issues with an alcohol study and were instructed not to use any drugs within 24 hours and no food or water for 4 hours before the study. Two sessions took place, the first session aimed to measure baseline drinking behaviors during a 30-min drinking period where participants sat alone and completed various self-report measures. During this, a large alcoholic beverage with approximately "36 ml of absolute alcohol" was provided as necessary to the participants (Kidorf & Lang, 1999). The second session included a video camera and recording equipment being placed in the room with the participant during the 30 min drinking period. Participants in this second session were told that after 30 min they would be giving a speech about "their most undesirable characteristic" and it would be graded by the researchers

(Kidorf & Lang, 1999). The same alcoholic beverages as the first session were provided when requested. Once 30 minutes had passed, they completed more self-report measures and were then told they did not have to give the speech.

Their study results showed that first, the average participant regardless of anxiety levels consumed more alcohol in the alcohol session than in the control session (Kidorf & Lang, 1999). A major finding was that individuals who reported higher levels of social anxiety (and men who believed more in socially assertive alcohol expectancies) were more likely to consume greater volumes of alcohol in anticipation of a speech. Even though this paper does not analyze gender as a main contributing factor to the social anxiety and alcohol use relationship, it is important to note evidence found for men being particularly more vulnerable to endorsing socially assertive alcohol expectancies and consequently being more at risk for increased alcohol consumption. This could be a key factor to consider in studies that do not find alcohol expectancies to be predictive of drinking behavior in those with social anxiety. Conclusively, this study provided more evidence to support that those with social anxiety may drink more in anticipation of social stress but provided mixed results for alcohol expectancies. Only men were affected by their alcohol outcome beliefs but as noted, this only provides evidence for future avenues of social anxiety research.

A few limitations of this study exist. First, given that participants completed a baseline session before the experimental/alcohol session, increases in alcohol consumption might be due to the comfort levels of the participants. Even though individuals with social anxiety in a new environment could be particularly vulnerable to this, due to measures of mood not indicating this shift from sessions this wasn't a significant issue (Kidorf & Lang, 1999). Another limitation of this study is that the stress manipulation was specifically focused on a self-disclosing speech.

Even though it was effective in this study in eliciting stress, this scenario may not generalize to other anxiety-provoking situations (Kidorf & Lang, 1999). Their study design did not include a no-drinking control group or fixed alcohol doses. These limitations aren't that pertinent to the study considering they were measuring self-driven alcohol consumption volume and included a baseline session to compare experimental results. Lastly, this study is over 20 years old and did not provide full demographic data for the participants, limiting reviews like this from clarifying how well these results generalize.

The influence that alcohol expectancies can have on alcohol use and alcohol-related problems for those with social anxiety seems to vary and might depend on other factors like gender to produce an effect (Kidorf & Lang, 1999; Meade Eggleston et al., 2004). Ham and colleagues (2015) noted in their study that specifically measuring alcohol expectancies that target social outcomes may help better predict drinking behavior for those that are socially anxious. As mentioned earlier, because social anxiety is characterized by a fear of social judgment (American Psychiatric Association, 2013), measuring beliefs like “alcohol will reduce my social discomfort”, may better relate to socially anxious individuals than general alcohol outcome beliefs (Ham et al., 2015). In their study, they also wanted to focus on a population that is particularly vulnerable to developing alcohol-related problems, college students. Knowingly, many social events on college campuses involve drinking games and binge drinking episodes among many students (Maisto et al., 2022). The population of those with social anxiety in college who choose to participate in social events may be particularly vulnerable to hazardous drinking to alleviate social discomfort, making alcohol expectancies that target social outcomes especially relevant. Their current study aimed to measure how alcohol outcome expectancies specific to social outcomes would impact the relationship between social anxiety and hazardous

drinking (alcohol use & alcohol-related problems). Ham and colleagues (2015) hypothesized that positive AOE would be associated with both alcohol use and alcohol-related problems and that negative AOE would be associated with lower levels of both hazardous drinking incidences.

To test their hypothesis, they recruited 718 participants that were all undergraduates at a large midwestern university over the age of 18. They had participants complete an online survey that specifically measured social alcohol outcome expectancies, social anxiety, alcohol consumption, and alcohol-related problems. Results showed that higher levels of social anxiety were associated with higher positive and negative social alcohol expectancies (Ham et al., 2015). They found that higher positive social AOE and lower negative social AOE were associated both with greater alcohol consumption and greater alcohol-related problems. When controlling for the positive and negative AOE, social anxiety was only significantly correlated with alcohol-related problems, not alcohol consumption (Ham et al., 2015). No statistically significant moderation effect was found for positive social AOE or negative social AOE. These results provided a clearer picture of alcohol expectancies that suggests endorsing more positive social AOE may increase hazardous drinking behaviors while endorsing more negative social AOE may protect against hazardous drinking.

Limitations of this study first include the use of self-report data. Reporting biases can always be present in self-report-type measures, especially due to these questions being about alcohol and many of the participants being under the legal drinking age. Limitations also arose from the sample used in their study. 1 in 5 of the college-student participants reported no drinking in the past year. There were also relatively low levels of social anxiety that were measured across the sample being this was a non-clinical sample. Higher levels of drinking, social anxiety, or the use of a clinical sample may have produced a stronger effect. The

generalizability of the results that were found could also be limited by the sample being specifically from a large-midwestern university and being predominantly white. Even given these limitations, Ham and colleagues managed to conduct the first study that looked specifically at alcohol expectancies that targeted social outcomes. Their findings of these positive and negative social AOE being related to drinking behavior in those with social anxiety has great implications for further research on what may strengthen or vary the relationship they found.

Drinking Motives

Buckner and colleagues (2006) mention in their article that some individuals with social anxiety are at risk for greater alcohol-related problems while others face no challenges and may even consume less than normal amounts. A factor that may account for this variation that has been mentioned by other studies as being particularly relevant for those with social anxiety is drinking motives. Buckner and colleagues' (2006) main goal in their study was to clear up this ambiguity and examine varying factors that may affect the relationship between social anxiety and alcohol use. Alcohol expectancies, even though they have a body of research supporting their position as a key predictor of alcohol use for those with social anxiety, are varied in their effect sizes found across other research (Meade Eggleston et al., 2004). Drinking motives (coping, social, and enhancement), on the other hand, have been found to be a more proximal indicator of problematic alcohol use in those with social anxiety (Buckner et al., 2006). In Buckner and colleagues' (2006) study, they examined what drinking behaviors or consequences are associated with social anxiety. They then wanted to look at whether socially anxious individuals endorse certain drinking motives or situations and if those drinking motives and situations moderated the relationship between social anxiety and problematic alcohol use behaviors. Given past research, Buckner et al. (2006) hypothesized that higher levels of social

anxiety would be associated with higher endorsement of coping and enhancement motives. They also hypothesized that higher alcohol consumption and related problem levels would be associated with higher levels of social anxiety in situations with conflict with others, unpleasant emotions, physical discomfort, and social pressure. Lastly, they predicted the drinking motives and situations that correlated with social anxiety would mediate the relationship between problematic alcohol use and social anxiety.

Buckner and colleagues (2006) study consisted of 293 undergraduate participants who were at least 18 years old and who reported drinking at least once in the past 6 months. Participants filled out a sequence of self-report measures in a group setting that surveyed alcohol consumption, alcohol problems, social interaction anxiety, drinking motives, and drinking situations. The results showed that first, social anxiety was not significantly associated with the quantity or frequency of alcohol consumption, but social anxiety was found to be positively and significantly associated with alcohol-related problems (Buckner et al., 2006). Next, social anxiety was significantly correlated with enhancement motives but no other drinking motives. Social anxiety was also significantly correlated with the following drinking situations: unpleasant emotions, conflict with others, social pressures to drink, and testing personal control (Buckner et al., 2006). The mediational effects of drinking motives and situations on the relationship between social anxiety and alcohol-related problems were tested (Buckner et al., 2006). Enhancement motives and each of the four drinking situations correlated to social anxiety mediated the relationship between social anxiety and alcohol-related problems (Buckner et al., 2006).

The association found between social anxiety and alcohol related-problems in this study is similar to past research. Even though those with social anxiety may consume less alcohol they

can still be at risk for alcohol-related problems, and this follows alcohol use disorder's categorization of involving problems not necessarily quantity of alcohol use (American Psychiatric Association, 2013). Social anxiety was not correlated with physical discomfort, but past research suggests those who are panic-prone do consume alcohol to alleviate physical discomfort, offering evidence that different drinking behaviors exist for different anxiety disorders. Given that social anxiety was correlated with enhanced drinking motives, but social anxiety was not associated with drinking during pleasant emotional situations, the authors suggest individuals with social anxiety may consume alcohol to experience positive affect in difficult social situations (Buckner et al., 2006). Buckner et al. (2006) found that no drinking motive or situation moderated the relationship between social anxiety and any drinking behavior. More research needs to be done into searching for factors that can protect those with SAD from high-risk drinking behaviors which can be utilized in creating better treatment plans.

Buckner and colleagues described several ways in which their ideas can be expanded upon in the future. First, causal inferences between social anxiety and alcohol consumption, drinking situations, and motives cannot be drawn from their cross-sectional study. Second, the use of self-report measures also leaves response bias in question. Third, the participants in the study were a non-referred group that consisted mainly of Caucasian individuals who did not abstain from alcohol use. This brings up questions about how participants with SAD seeking treatment may respond to the surveys, how generalizable the data collected is to other races and groups, and how those with SAD who do not regularly consume alcohol could be chosen to show what factors they endorse that lead them to be protected from alcohol use in the situations found in this study. Even given these limitations, Buckner and colleagues collected valuable information on the role of specific drinking situations and motives in their relationship to social

anxiety. Their study also provided additional evidence for the relationship social anxiety has to problematic alcohol use behaviors, showing that problems can exist without heavy consumption.

Social Environments

Many individual difference variables have been researched in their effects on drinking behavior in those with social anxiety. Individual differences such as alcohol beliefs and drinking motives have shown some effect in predicting drinking behavior but varying overall findings of social anxiety and alcohol use's relationship point towards these being more distal correlates. When considering that social anxiety is characterized by a fear of social interaction or possible scrutiny from others, the social context that individuals choose to consume alcohol in is very pertinent information to predicting consequent drinking behavior. Caumiant and colleagues (2023), wanted to explore in their study how social contexts, a main indicator of stress for those with social anxiety disorder, could predict alcohol use in those with social anxiety. A lack of research exists in this field due to many historical studies being limited by laboratory settings that fail to imitate daily life and natural social scenarios (Kidorf & Lang, 1999). To improve upon these issues, Caumiant and colleagues (2023) utilized current transdermal alcohol sensor technology that measures a user's alcohol content that diffuses through their skin. They hypothesized that participants with higher levels of social anxiety would consume more alcohol in unfamiliar social settings relative to familiar social settings.

Their study included 48 participants that were all identified as being heavy or at-risk drinkers (Caumiant et al., 2023). Participants underwent an initial orientation where they filled out survey questions concerning their mood, personality, drinking behavior, and social anxiety (social fear and social avoidance). They were then provided a SCRAM-CAM transdermal ankle bracelet that they wore during the week-long study and were also instructed to download an

app-based survey platform on their smartphones to complete six surveys a day at random times throughout the week. The surveys would ask participants to take photos of their immediate social environments, asking them to capture as much of the setting as possible in the photos. Two additional sessions during the week occurred. The first was a mid-week check-in for participants to ask about technological issues or concerns the participants may have at that point in the study. The second session included returning study equipment and asking the participants to complete a photo-report task. In this task, each participant was shown the photos they took throughout the week and was asked to characterize their relationship with the people in the photos and how much time they spent with them during the week. Experimenters used those characterizations and time spent with strangers or close friends/family to determine social familiarity levels.

Caumiant and colleagues (2023) first found that there was a main effect for social familiarity on alcohol consumption. As the estimated breath alcohol concentration (transdermal sensor data) levels decreased, social familiarity increased. More specifically, there was a 14% increase in estimated breath alcohol concentration “per unit decrease in social familiarity within the drinking context” for those high in social anxiety (Caumiant et al., 2023). Caumiant and colleagues (2023) also looked at social familiarity in terms of social fear and avoidance. The results showed that socially anxious individuals, specifically those with social fear in unfamiliar social settings, consume more alcohol than those with lower social anxiety. This provides valuable evidence for the importance of considering social environments and more specifically familiarity within those settings to better predict alcohol consumption in those with social anxiety.

The limitations of this study reflect many of the limitations in past research. First, the use of a non-clinical sample means the data may not generalize to those with full social anxiety

diagnoses. Along with that, trait-level anxiety levels were measured at the beginning of the study and did not allow the researchers to determine anxiety levels throughout the different social settings. Next, because photos of the participant's environment were randomly assigned throughout the week on the survey app, the actual number of photos that captured drinking was modest. The researchers could also not count on the social settings photos to be completely accurate in depicting their entire social scene or the people they interacted with within it. Even given these limitations, Caumiant and colleagues managed to capture real-life social settings that cause stress in individuals with social anxiety, an accomplishment not yet achieved before them. They also integrated new transdermal alcohol sensors technology that allowed an accurate measure of alcohol consumption instead of relying on erratic self-report data. These researchers suggest future studies that incorporate social settings with drinking motives could be an insightful avenue for predicting drinking behaviors in those with social anxiety.

Discussion

Summary

As described throughout this paper, the relationship that social anxiety has to alcohol use isn't always so clear-cut. Even more varied is the research on what factors influence their relationship and if they could be used to predict consequent drinking behavior. In completing this review, what was first found was that there was a significant number of studies that provided evidence for social anxiety, and those with trait-level general anxiety being associated with alcohol-related problems, not necessarily alcohol consumption (Ham et al., 2015; Buckner et al., 2006; Goldsmith et al., 2012). Without considering individual differences, it is obvious that those with social anxiety are at risk for developing alcohol-related problems even if they do not drink in large quantities or frequently. This can have important implications for clinical treatment or

future studies that have only measured alcohol consumption in relation to social anxiety.

Therefore, it was established in this review that the relationship likely does exist and changes in accordance with individual differences and social scenarios. Now that the relationship has been clarified, it is important to now look at what changes this relationship.

The first factor that was examined in this review was alcohol expectancies. Alcohol expectancies were measured in many of the studies by considering both the positive and negative alcohol beliefs socially anxious individuals have. One of the main findings was that higher levels of social anxiety were associated with greater endorsement of both positive and negative alcohol expectancies (Meade Eggleston et al., 2004; Ham et al., 2015). The endorsement of more positive alcohol outcome beliefs, not negative, seemed to predict greater alcohol consumption and alcohol-related problems in those with social anxiety (Meade Eggleston et al., 2004; Ham et al., 2015). These findings are in line with other research such as Goldsmith and colleagues (2012) that found endorsing more tension-reduction alcohol expectancies predicted greater alcohol-related problems in those with high generalized anxiety. It seems then that believing more in the positive effects of alcohol use could predict if someone with social anxiety develops alcohol-related problems from drinking. Limitations of the actual change this factor can have on the relationship between social anxiety and alcohol use exist in that moderation effects for alcohol expectancies were not found throughout the studies and some found their effects to be dependent on other factors (Meade Eggleston et al., 2004; Ham et al., 2015; Kidorf & Lang, 1999).

The next factor that was examined in relation to alcohol use and social anxiety was drinking motives. The three drinking motives examined in this review were coping, social, and enhancement motives (Buckner et al., 2006). The results showed that even though it is thought

that substances are used to alleviate or cope with anxiety symptoms, social anxiety was only associated with enhancement motives. The researchers suggest this evidence is a result of socially anxious individuals possibly wanting to experience positive feelings in drinking situations they usually are fearful of. Drinking motives mediated the relationship found between social anxiety and problematic alcohol use in Buckner and colleagues' (2006) study which indicates motives play an important role in possibly predicting alcohol use and problems. Other studies also commented on their research and mentioned including a review of the motives of the participants could've helped clarify some of their results (Goldsmith et al., 2012; Ham et al., 2015; Caumiant et al., 2023). So, this factor does have evidence to support its ability to predict drinking behavior in those with social anxiety, but current research still suggests the need for more data collection and further exploration of motives in combination with other factors.

The last factor that was examined in this review was the effect of social situations on alcohol use for those with social anxiety. Social anxiety is defined as a fear of particular social settings and of judgment for others (American Psychiatric Association, 2013). This categorization has led researchers to determine the context in which socially anxious individuals choose to drink to be an important factor in determining drinking behavior. What has first been found is that individuals with social anxiety are more likely to consume higher quantities of alcohol in anticipation of a self-disclosing speech (Kidorf & Lang, 1999). The idea that socially anxious individuals change their drinking behaviors in response to feelings of social fear was also supported by Buckner and colleagues (2006) when they found scenarios such as conflict with others were associated with alcohol-related problems. Next, the level of familiarity that's felt during social settings was also found to influence alcohol consumption in those with social anxiety. Caumiant and colleagues (2023) were able to examine real-life social scenarios that

revealed social fear in unfamiliar settings to be a strong predictor of increased alcohol consumption. Applying the evidence found for the social environment's influence on drinking behavior to treatment plans for those with social anxiety could be very useful. Planning ways in which an individual could feel more comfortable and familiar with a setting before involving themselves in it could help alleviate the urge to drink in response to social fear.

Limitations

Many of the relationships and factors found to predict drinking behavior are limited by some of the study's components. One of the most prevalent limitations in the studies that were reviewed was the use of non-clinical samples. Researchers relied on self-report measures of social anxiety levels instead of diagnostic measures. Given that this research is ideally used to aid in the treatment of social anxiety disorder, using participants that do not reflect full clinical diagnoses makes the generalizability of the data found less accurate. On the other hand, this data is still plenty relevant to the various individuals who struggle with anxiety symptoms and alcohol use but do not meet the full criteria for a diagnosis. Another generalizability issue that arose from many of the studies was an overwhelming (at least 80%) majority of participants being white young adults (Ham et al., 2015; Goldsmith et al., 2012; Buckner et al., 2006; Meade Eggleston et al., 2004). Even though researchers have taken an interest in young adult populations for their drinking behaviors, many of the studies did not aim to generalize to younger populations. The use of younger populations (under 21) in alcohol-related studies and relying on self-report of alcohol use also allows for response bias if participants are afraid of revealing their illegal habits. Lastly, the cross-sectional nature of many of the studies does not allow for the determination of causality for the data collected. Therefore, future longitudinal research could better provide a

cause-and-effect relationship for the many factors that are thought to be predictive of drinking behavior in those with social anxiety.

Future Directions

To better contribute to the literature on this topic, a study that considers the aforementioned limitations of many previous studies should be conducted. Tying in all the research found, the main goal of a future study should be to examine what alcohol outcome expectancies, drinking motives, and social settings correlate with social anxiety and whether they interact with social anxiety to predict alcohol consumption and alcohol-related problems. Many of the previous studies lacked in measuring both alcohol consumption and alcohol-related problems even though one can be present without the other and both can negatively affect a socially anxious individual. This ideal future study should consider utilizing clinical samples with better demographic diversity to better represent and generalize to more people with social anxiety. They could first measure drinking motives and alcohol expectancies with self-report surveys. Next, ultimately there would need to be some way to record and measure social settings and the anxiety levels felt during them by participants. In what way this could be achieved is still questionable considering the limitations of recording such feelings and scenes in real-time. Social settings would also need to be reviewed and categorized to determine what types (eg. unfamiliar, feeling social pressure, etc.) influence drinking behavior. To measure alcohol consumption during social events, studies like Caumiant et al. (2023) explored transdermal alcohol sensors and found them to be more reliable in-the-moment alcohol levels than self-report-styled recordings. These would ideally be used in this hypothetical study to measure alcohol consumption while alcohol-related problems could be measured through later surveys. If this study could accurately label natural social settings, record real-time anxiety levels, and

accurately measure alcohol consumption, alcohol expectancies, and drinking motives then many questions from previous researchers could be answered. Determining what individual differences and social situations put those with social anxiety at risk for increased alcohol consumption and/or alcohol-related problems is the best way to form treatment plans for those that struggle with these issues.

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