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**Fear of Missing Out and Collegiate Alcohol Use:
An Examination of Relationship and Direction**

**A Thesis Presented to the
Faculty of the Department of Psychology
University of South Carolina Aiken**

**In Partial Fulfillment
of the Requirements for the Degree
Master of Science**

**By
Noah R. Wolkowicz
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Abstract

Collegiate alcohol abuse is an ongoing problem in the United States (Core Institute, 2014). While there have been numerous investigations into this concern, the precise nature of what motivates alcohol misuse in this population still contains areas of uncertainty. One such area could be the newly identified phenomenon known as Fear of Missing Out (FoMO). Research into FoMO demonstrates it as a motivator for individuals to seek socially rewarding experiences (Przybylski et al., 2013); this characteristic indicates it as a potential risk factor for collegiate alcohol abuse. When considering alcohol's ubiquitous nature as a social facilitator in college campuses, these trait characteristics raise the concern that college students high in FoMO would be at an elevated risk for alcohol abuse. Therefore, the present study sought to examine the relationship between FoMO and collegiate alcohol use. Specifically, this investigation sought to determine if FoMO predicted how likely an individual was to drink, as well as their levels of alcohol craving. Additionally, this experiment sought to replicate initial demographic characteristics of FoMO, as well as assessing its relationship to individual psychological need satisfaction. Results of the present study did not identify a link between FoMO and self-reported drinking likelihood, but did identify FoMO as a predictor of alcohol craving. Interestingly, additional analyses failed to replicate Przybylski et al.'s (2013) finding that males report higher levels of FoMO than females and also failed to link FoMO to overall psychological need satisfaction. These findings represent several areas for continued investigation.

Fear of Missing Out and Collegiate Alcohol Misuse: An Examination of Relationship and Direction

In a recent national survey of collegiate drinking, almost 69% of students reported consuming alcohol within the past month (Core Institute, 2014). Forty-four percent of that same survey population also reported an instance of binge drinking within the previous two weeks (Core Institute, 2014). This report reflects the common and robustly found phenomenon of alcohol use and misuse in collegiate life. College students are notoriously stereotyped for excessive drinking, and while the general prevalence of routine drinking may vary, studies have cited monthly consumption rates as high as 91% for men and 80% for women (Perera, Torabi, & Kay, 2011). Regardless of the precise rates, what is certain is that this population uses alcohol to a heavier and more frequent degree than their non-college peers (Blanco et al., 2008; Carter, Brandon, & Goldman, 2010; Slutske, 2005). This data coincides with the high rates of alcohol related problems experienced by a significant portion of university students.

The previously mentioned national report identified that nearly a third (32.2%) of collegiate individuals reported experiencing some form of public misconduct (e.g., fighting, vandalism, DWI/DUI) as a result of alcohol consumption within the past year. During this same time period, more than one-fifth of students (21.8%) also reported experiencing some type of serious personal problem (e.g., thoughts of suicide, injury, sexual-assault; Core Institute, 2014). The negative consequences produced by college alcohol misuse have prompted researchers to examine this issue in depth, exploring the influential facets that drive individuals to initiate and maintain drinking for this

population. However, an area that remains unexamined in this regard is the phenomenon known as Fear of Missing Out.

“Fear of Missing Out”, or “FoMO”, is defined as a “pervasive apprehension that others are having rewarding experiences from which one is absent” (Przybylski, Murayama, DeHaan, & Gladwell, 2013, p. 1841). Previous surveys of the US and the UK illustrate that almost 75% of young adults reported experiencing FoMO (JWT, 2011). JWT Intelligence (2011) further posits that FoMO is a previously existing phenomenon, with a recent surge in its prevalence due to the heightened social awareness provided by modern social networking technologies. More specifically, JWT (2012) speculates that such technology yields to intrapersonal drives, which subsequently lead to FoMO. These drives are described as the result of socio-generational characteristics most prevalent in modern teens and young adults. Some of the more notable drivers included social transparency, or an intimate knowledge of others’ lives, social “one-upmanship”, the conscious or unconscious desire to demonstrate one is better than others in some way (e.g., funnier, smarter), and relative deprivation, the “dissatisfaction people feel when they compare their positions to others and grasp that they have less” (JWT, 2011, p. 4). Thus, the increased social awareness afforded by modern social media heightens the salience of such drives and is therefore purported to increase risk for FoMO.

According to the original empirical investigation delineating this construct, individuals experiencing FoMO desire continual connection with others (Przybylski et al., 2013). As a result, it may be assumed that any means of aiding in the achievement of this goal are particularly alluring to these individuals. The initial research on this subject supports this notion. Przybylski et al. (2013) sought to empirically examine FoMO’s

common aspects, its connection to psychological need satisfaction, and its relation with social media use. Through the use of self-report assessments, these authors noted the characteristics of FoMO, as well as construction and application of the first scale assessing this construct. The results of their exploration yielded a nationally representative sample, which provided deeper insight into the topography of FoMO. Younger individuals, particularly males, demonstrated the highest levels of FoMO. High levels of the construct were negatively related to psychological need satisfaction, general mood, and overall life satisfaction, but positively related to social media engagement (Przybylski et al., 2013).

Though ultimately a unique construct, FoMO bears similarities to certain existing phenomenon, such as anxiety. A crucial component of anxiety according to the DSM-5 is the existence of an excessive sense of fear or anxiety, which often occurs in regard to certain situations or instances (APA, 2013b). For individuals with FoMO, such exaggerated concerns are specific to instances that indicate an absence from desired experiences to the individual. In this sense the construct appears an inverse of social anxiety, in that those experiencing FoMO are motivated by their anxieties to maintain and further continual social connection.

Additionally, Przybylski et al. (2013) note the importance of psychological need satisfaction, specifically, autonomy, competence, and relatedness (Deci & Ryan, 2000), as a driving force behind FoMO. This is a crucial component of this construct to note, as psychological need thwarting has been linked to general deficiencies in psychological well-being. For example, Kipp and Weiss (2015) found that psychological need satisfaction predicted higher self-esteem and lower disordered eating in female gymnasts.

Further, Saeki and Quirk (2015) identified that more engaged students demonstrated lower social-emotional and behavioral risk. What is notable about this finding is that engagement in this study represented a function of need satisfaction, with higher levels of satisfaction predicting higher levels of engagement and lower levels of social-emotional/behavioral problems. Lastly, the relationship between psychological need satisfaction and well-being appears relatively consistent across certain cultures. Chen et al. (2015) conducted a study examining basic need satisfaction across four different countries (Belgium, China, USA, and Peru), finding that this construct was positively related to optimal functioning, regardless of cultural background.

Ultimately, the FoMO phenomenon manifests as difficulties in intrapersonal regulation deriving from either dispositional or environmentally produced deficits in psychological need satisfaction. This is then characterized by persistent anxiety over one's absence from pleasurable experiences with others. This has been linked to poorer intrapersonal functioning as evidenced by decreased life satisfaction, increased negative affect, and negative perceptions of psychological need satisfaction (Pryzbylski et al., 2013).

While the FoMO phenomenon has currently only been explored in regard to social media use, it represents an opportunity to explore collegiate alcohol use from a unique angle. Consider again, social anxiety. This construct is similar in that it produces an uncomfortable state, which individuals are then motivated to reduce. However, unlike FoMO, the stereotypical behavior exhibited by those with social anxiety is to avoid social situations. Further, such individuals in collegiate populations typically drink less than their peers, while simultaneously experiencing higher rates of alcohol-related problems

(Schry & White, 2013). Contemporary investigators have posited that social anxiety reduces individual exposure to collegiate events in which alcohol would be present, decreasing consumption rates (Morris, Stewart, & Ham, 2005). Simultaneously however, these same individuals demonstrate intensified alcohol expectancies regarding “convivial” atmospheres (Ham, Lham, Zamboanga, & Bacon, 2011) and “self-medicating tendencies” (Strahan, Panayiotou, Clements, & Scott, 2011). Vilarosa, Madson, Zeigler-Hill, Noble, and Mohn (2014) found that consuming alcohol for such forms of positive enhancement was related to increased problematic drinking patterns.

Given the empirical description of FoMO by Przybylski et al. (2013), college students experiencing this phenomenon appear to endure anxiety states, that similar to social anxiety, motivate them to behave in accordance to their psychological needs, particularly relatedness. In other words, the apprehension that one may be absent from rewarding experiences with others undermines the notion that one is connected to their social group. This then may call into question how effectively an individual can operate interpersonally (i.e., social competence) and in certain instances, produce conforming behaviors to promote integration.

Further, when considering that FoMO is a particular type of social apprehension that encourages *increased* social involvement, certain collegiate students with this profile could be at heightened risk for alcohol misuse. These students would presumably be involved in regular alcohol consumption, and may belong to organizations or social groups that endorse its consumption (e.g., athletic teams, fraternities). Therefore, this examination seeks to explore how FoMO relates to alcohol misuse. To accomplish this goal the present investigation will utilize two main theories to serve as a thorough

foundation for predicting how FoMO might promote certain collegiate students initiate alcohol use. The two primary frameworks that will be utilized are Self-Determination Theory (Deci & Ryan, 1985) and Social Learning Theory (Akers & Lee, 1996; Baer & Bandura, 1963; Bandura, 1978).

Self-Determination Theory

Self-Determination Theory (SDT) provides a useful framework for understanding how both intrinsic and extrinsic motivation guide behavior. It has been described as a humanistic theory of motivation (Hove, Parkhill, Neighbors, McConchie, & Fossos, 2010), originally growing from a framework of motivational research examining optimal human functioning (Deci & Ryan, 1985; Walters & Rotgers, 2012). In other words, the theory is concerned with what factors, whether internal or external, as well as the environments in which they occur, promote or inhibit motivation and by extension, action (Ryan & Deci, 2000). If motivating factors are appropriately autonomous and produce intrinsically volitional actions, optimal human functioning occurs. It is important to note that “optimal functioning” in the context of this theory also explicitly includes “constructive social development”, which refers to an individual’s ability in navigating their social environment with efficiency and self-efficacy (Ryan & Deci, 2000). In a review of theories relating to health promotion, Frotier, Williams, Sweet, and Patrick (2009) examined evidence highlighting SDT’s predictive and explanative power in a plethora of areas including physical activity, weight loss, medication adherence, tobacco abstinence, diabetes management, and cholesterol management.

SDT consists of two components, Organismic Integration Theory (OIT) and Cognitive Evaluation Theory (CET; Sharma & Smith, 2011). The first concerns

differences in extrinsically motivated behavior on a four-point spectrum, which ranges from external control to complete autonomy (Ryan & Deci, 2000). External regulation describes behavior conducted only for the obtainment of reward and/or the avoidance of punishment (Ryan & Deci, 2000). Thus by extension, actions that are externally regulated are often only maintained while the incentive is present (Walters & Rotgers, 2012a). Similarly, introjected regulation refers to behavior performed for affective or socially evaluative responses (Ryan & Deci, 2000). For example, complementing a co-worker in order to obtain a favor. Toward the more autonomous end of the spectrum, action motivation can occur through identified regulation or integrated regulation. Both describe acting in consideration of a behavior's rationale and a genuine want of that action's outcome (Walters & Rotgers, 2012a). However, identified regulation is temporally less permanent than integrated regulation. It typically occurs if the necessary response is easy to perform and when long-term commitment is not required (Walters & Rotgers, 2012a). For example, an adult eating vegetables because he/she was told they were "healthy" is a form of identified regulation. In this case the behavior's value is understood and as a result, it has become more integrated into their identity, making the choice more intrinsically motivated (Deci & Ryan, 2000). Integrated regulation in contrast reflects a genuine match of the action with the actor's values. This type of regulation is most similar with intrinsically motivated behaviors and its connection to personally embraced beliefs, motivates the individual to maintain the salient behavior(s) (Ryan & Deci, 2000). Consider again the adult eating vegetables. While this behavior may have initially begun only at the prompting of others (i.e., extrinsically motivated), the case of integrated regulation, the individual has fully identified the importance of eating health as well as

integrating this importance as a personal value. Thus, the behavior becomes a form of self-determined extrinsic motivation (Deci & Ryan, 2000).

The second component of SDT is CET. This area of Ryan and Deci's (2000) theory is primarily concerned with the three psychological needs previously mentioned (competence, autonomy, and relatedness), as well as how individuals perceive the source of their actions (i.e., the behavior's "perceived locus of causality", p. 70). Competence refers to an individual's ability to effectively act on their environment. This psychological need is largely dependent on situational context and the extent to which individuals are faced with optimal challenges. Optimal challenges present difficulty but within an individual's ability. Actions that lead to successful completion of such challenges, along with feedback indicating success, enhance intrinsic motivation and the fulfillment of competence as a psychological need (Ryan & Deci, 2000). However, competence is not independently sufficient. People must feel that the actions being performed are done so of their own free will. This refers to what SDT describes as the perceived locus of causality. As stated by Ryan and Deci (2000), "... people must not only experience competence or efficacy, they must also experience their behavior as self-determined for intrinsic motivation to be in evidence" (p. 70). Environments that encourage self-determined behavior in any sense are assumed to fulfill the psychological need of autonomy and subsequently promote well-being.

SDT also posits that people act in a way that satisfies their need for relatedness, otherwise understood as the universal desire for connection and belonging within social groups (Ryan & Deci, 2000; Walters & Rotgers, 2012). While it may initially seem that a strong sense of group cohesion is antithetical to a strong sense of autonomy, Deci and

Ryan (2000) specify that strong group ties provide feelings of security, which in turn have the potential enhance an individual's competence and autonomy. Consider the motivation behind striving for positive social indicators. It is common knowledge that people enjoy being praised and receiving positive evaluation. This notion is supported by robust findings indicating individual's receiving positive recognition, or who are otherwise encouraged, are more engaged in the task they are performing (Anderson, Manoogian, & Reznick, 1976; Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008; Park & Kim, 2014). For example, Kuntsman, Plant, Zielaskowski, and LaCosse (2013) tested the extent of individual response to prejudice as a result of racial outgroup acceptance. The authors found that increased acceptance from outgroups resulted in increased intrinsic motivation to act in the prevention of prejudice, in addition to promoting cohesive intergroup connections (Kuntsman et al., 2013). Another study by Lu and colleagues (2014) reported similar results, finding that peer norms predicted physical activity in junior high school students. Importantly, self-efficacy acted as a mediator in this relationship, either increasing or decreasing the effectiveness of peer norms as a motivator. These findings illustrate how the psychological need of relatedness has the potential to either enhance or inhibit, both an extrinsic and intrinsic motivation.

Collectively then, OIT and CET describe human action in light of its psychological fulfillment, motivational source, and the effects produced by this source. Individuals seek to act in a manner that fulfills their needs for competence, autonomy, and relatedness. Additionally, SDT posits that all behavior is shaped by the motivational forces driving it. Motivation that is intrinsically sourced, or at the very least intrinsically perceived, produces much more stable and durable behavior than that which is externally

derived (Deci & Ryan, 2000). These notions are crucial when examining collegiate alcohol misuse, particularly in regard to FoMO. This is because FoMO is a socially derivative construct that centers on a need for interpersonal connectedness. Given the conceptualizations of FoMO by Pryzbylski et al. (2013), these individuals have a profile that seems particularly vulnerable to social pressures and influences. Further, findings by the construct's initial investigators indicate that those high in FoMO experience low psychological need satisfaction. Pryzbylski et al.'s (2013) finding that these individuals sought social media due to its utility as a "high efficiency low friction" social connector (p. 1841) highlights their lack of need fulfillment, particularly in regard to relatedness. In regard to the college environment itself, studies have indicated that early years in university are particularly characterized by conformity and the projection of perceived normative attitudes (Ferrer & Dillard, 2012).

Collegiate environments frequently contain distinctly salient social norms in regard to drinking (e.g., Iwamoto et al., 2014) and are colloquially notorious for their inclusion of alcohol at social gatherings. For example, according to a Core Institute (2014) survey, 82% of male students and 73.1% of female students reported that they viewed drinking as central to collegiate social life. It also represents the first time for many students that parental pressures are released and a newfound sense of independence can be established. In other words, these individuals would be experiencing markedly less extrinsically controlled regulation than they previously did. Unfortunately, social pressures are not removed upon entering university. The concern that these students would potentially seek alcohol as a "high efficiency low friction" means to achieve social connection, and therefore psychological need fulfillment, is a logical prediction.

However, in order for individuals to see alcohol as a potential solution to “missing out”, it must be identified with the properties required to do so. Namely, alcohol would have to be seen as an effective method for either inducing immediate future social inclusion. If identified as such, individuals with FoMO would be at high risk for using alcohol as a social facilitator that in turn, might predispose such students for alcohol misuse. In an effort to elucidate how college students with FoMO might come to develop these alcohol-related associations, the current review now turns to social learning theory.

Social Learning Theory and the Effects of Alcohol Priming

Differential association and cognitive definitions. Social Learning Theory (SLT) and its principle tenants have been well known since Bandura published his seminal bobo doll studies (Baer & Bandura, 1963). Ultimately, the theory argues that social learning and association occurs through the observation and imitation of others, as well as individual reactions to such stimuli (Baer & Bandura, 1963; Bandura, 1978). SLT has been widely supported in investigations of numerous subjects, including individual engagement in deviant behaviors like alcohol misuse (e.g., Akers, 1998; Borsari & Carey, 2006). The vast utility of SLT is a result of the general applicability of its four major components (reviewed below): differential association, cognitive definitions, imitation, and differential reinforcement, to human behavior (Peralta & Steele, 2010). In regard to FoMO and alcohol use, however, the first three components are most relevant and will therefore receive the most attention in this investigation. SLT is a vital theoretical addition as it provides a clear, empirically supported explanation for how alcohol-related associations and behaviors develop. In order to best delineate the connections between

this theory and collegiate alcohol abuse, its major principles will be discussed in regard to the subject of alcohol misuse itself.

According to Akers, Krohn, Lanza-Kaduce, and Radosevich (1979), deviant behavior, including drug misuse, derives largely from the observation of socially salient individuals (i.e., family, friends, close mentors), which through direct or indirect associations are mentally paired with a particular drug, as well as cognitive evaluations of a given drug's appropriateness. As the authors describe it, drug misuse is a "socially influenced behavior, acquired and sustained through a learning process in which these four main sets of variables operate" (Akers & Lee, 1996, p. 319). Collectively, these influences have the potential to afford drugs like alcohol meaning. Consider the phenomena of differential association, imitation, and cognitive definitions. Differential association refers to the direct and indirect interactions with others, while differential reinforcement concerns directed learning through reinforcement or punishment (Akers & Lee, 1996). When individuals interact with one another in the presence of alcohol, associations are produced, connecting the individual being interacted with and alcohol. Studies have indicated that these types of associations are powerful mediators of drinking behavior (Aliiaskarov & Bakiev, 2014; Barnett, Ott, & Clark, 2014) and the effects can be strengthened over time. As evidenced by classic studies of Pavlovian conditioning, the effects of association are cumulative such that increased pairings of one subject of interest with another produce stronger associations (Timberlake, 1994).

In classic stimulus-response fashion, the more favorable pairings between alcohol and positive events or persons, the more intensely alcohol will be associated with producing positive effects. For example, Chen, Grube, Bersamin, Waiters, and Keefe

(2005) conducted a study of alcohol advertisements and their influence on the affective responsive of youths. Respondents were shown several advertisements, followed by questions examining their perceptions of the alcohol being shown. Chen et al.'s (2005) results demonstrated that positive affective responses operated as a function of the specific likeable elements presented by each advertisement. Other researchers have found similar results regarding positive or persuasive exposure to alcohol and the resulting favorable opinions associated with the substance (e.g., Grenard, Dent, & Stacy, 2013; McClure, Stoolmiller, Tanski, Engels, & Sargent, 2013). Additional investigations have further identified that increased exposure not only increases likeability, but consumption rates as well (Jones & Magee, 2011; Ross et al., 2015). Consider the inverse perspective from the results of a multinational study that assessed alcohol control policies on youths in 26 different countries. The findings from this examination yielded that control of alcohol advertising, and thus exposure to potential association, was inversely related to 30-day alcohol use prevalence for those who drank 3 or more times during this period (Paschall, Grube, & Kypri, 2009).

These associations in turn have the potential to shape personal attitudes about alcohol. For example, a child witnessing his or her parents drinking then associates alcohol as an adult activity, or college students observing peers drink identifies alcohol as a social lubricant. As will be later discussed in detail, SLT further posits that behavior is acquired through imitation, or modeling, of salient others within a social setting (Akers et al., 1979). This is especially true for alcohol misuse, and researchers have noted that for college students, associations obtained from peers in particular are predictive of drinking behavior (McClure et al., 2013; Standing, 2002; Wood, Read, Mitchell, & Brand, 2004).

This kind of behavioral reflection can become quite pervasive, and studies have shown that individuals will even imitate the beverage sipping behavior of their peers (Larsen, Engels, Souren, Granic, & Overbeek, 2010). This research therefore demonstrates how pairings between alcohol and salient environmental components may result in modified behaviors.

However, such associations have more than behavioral impact and have also been shown to alter individual perspectives regarding alcohol and alcohol use. Akers and Lee (1996) describe this phenomenon in regard to learned, deviant behavior, through the concept of cognitive definitions. Akers (1979) describes these attitudes as evaluative, defining the performed actions on a scale of appropriateness (e.g., appropriate, inappropriate, neutral). Cognitive definitions bear the qualities of behavior in that they can be reinforced, punished, become associated with, or serve as cues for other behaviors (Akers, 1979). These definitions have a great deal of importance in regard to substance misuse, and recent literature reviewing alcohol refers to them as “outcome expectancies”. Alcohol outcome expectancies have been defined as “explicit or implicit beliefs about the likely results of alcohol consumption” (Monk & Heim, 2013, p. 539). Expectancies have a great deal of influence over individual drinking behavior. For example, research on the subject has demonstrated that individuals with positive alcohol expectancies (i.e., beliefs that drinking will result in desired or rewarding outcomes) have increased consumption rates compared to individuals with neutral or negative expectancies (Fromme & D’Amico, 2000; Ham, 2009; Mezquita et al., 2015). Thus, the substance is believed to bring about positive effects, it is more likely to be consumed (Fu, Ko, Wu, Cherng, & Cheng, 2007; Harnett, Lynch, Gullo, Dawe, & Loxton, 2013).

Alcohol expectancies are notably present on college campuses (e.g., Iwamoto et al., 2014; Kenney, Jones, & Barnett, 2015), particularly in regard to social facilitation (e.g., Gilles, Turk, & Fresco, 2006). For example, Pérez et al. (2005) reported that the expectancy for social enhancement was the principle belief regarding alcohol consumption of the college students surveyed. Similarly, Borjesson and Dunn's (2001) examination of collegiate males and females found that social enhancement was the highest correlated expectancy for both males and females. Other related expectations included the belief by males that females will be happier and more confident, along with the belief by females that males would be more romantic and less sexually inhibited after consuming (Borjesson & Dunn, 2001). Therefore, it is clear that alcohol is frequently associated with not only social interaction, but the enhancement of social interaction in numerous facets.

In regard to FoMO, differential association and alcohol expectancies provide the means by which individual perceptions of alcohol receive intrinsic value. Identifying drinking behaviors as a means by which positive results can be obtained, particularly in regard to social enhancement, could make the substance a lucrative option for individuals with FoMO. The fact that such students seek rewarding experiences further emphasizes the value of alcohol as the means to fulfill psychological needs. However, individuals obtain association in more ways than through singular events or expectancies. More global social influences can have extensive impact on individual behavior, particularly when environments consist almost exclusively of one's peers. In light of this, the current review now turns to the influences such individuals have on drinking behavior.

Peer Influences: Social Norms and Modeling. While a significantly salient force independently, association and belief are not the only facets that might influence drinking behavior for those with FoMO. Another significant source of learning to consider are those of peer influences. Peers are an important social referent in college, particularly in regard to alcohol, and have the potential to either increase or decrease drinking related behaviors (e.g., Goode, Balzarini, & Smith, 2014; Reed, Lange, Ketchie, & Clapp, 2007). Peer influence is, however, multifaceted and consists of several components including modeling and social norms (Borsari & Carey, 2001). As described in the literature, modeling or imitation refers to the vicarious assimilation of knowledge through the observation of others (i.e., observational learning; Akers & Lee, 1996). A quintessential example of this phenomenon is the seminal Bobo doll study conducted by Bandura (Baer & Bandura, 1963), in which children who witnessed more aggressive models, in turn, acted more aggressively. Research over the decades has expanded this concept to alcohol, demonstrating robust findings. Studies of peer modeling effects on have shown that when individuals' peers are more involved with alcohol, the individual him or herself has an increased risk of drinking (Bahr, Hoffman, & Yang, 2005; Nargiso, Friend, & Florin, 2013). For example, Schwinn and Schinke (2014) found that increased peer usage, along with overt peer alcohol offers, was associated with higher rates of alcohol use, intentions to drink, binge drinking, and alcohol-related consequences.

Peer modeling, is also influenced by the perceptions of the observer as well as the context of the behavior. In social situations, this manifestation of vicarious learning occurs frequently in college settings. For example, Washburn, Capaldi, Kim, and Feingold (2014) examined how time with substance-abusing peers influenced individual

drug use. Their results demonstrated that those who spent greater time with substance using peers positively predicted both frequency and volume of alcohol use (Washburn et al., 2014). Another example includes Barnett et al.'s (2014) investigation in which a social network analysis was conducted. Certain college students were asked to identify peers who were important to them, and these relationships were then monitored. Barnett et al.'s (2014) findings showed that the initial college student's weekly alcohol intake was significantly associated with that of their identified peers.

One of the empirically identified causes of this frequently demonstrated modeling is known as normative behavior (e.g., Merrill, Read, & Colder, 2013). Social norms in regard to alcohol use are referred to in the literature as "alcohol perceptions" (Hustad, Pearson, Neighbors, & Borsari, 2014). Such perceptions can be incredibly influential in driving drinking behavior. According to one study and its investigation of social norms, demographic information, drinking motives, and alcohol expectancies, normative perceptions were the best predictors of alcohol consumption among heavy drinking students (Neighbors, Lee, Lewis, Fossos, & Larimer, 2007). In the literature, socio-normative perceptions are separated into two categories: descriptive and injunctive norms (Capone, Wood, Borsari, & Laird, 2007).

Descriptive norms refer to an individual's belief regarding the majority's drinking behavior (Capone et al., 2007), a subject for which college students are not known for their accuracy. For example, a national survey of students attending university reported that 87.4% of students believed their average peer drank once a week. However, only 68.7% of those surveyed reported consuming alcohol in the past month (Core Institute, 2014). Unfortunately, the influence of descriptive norms on consumption patterns is

similar to alcohol expectancies. When one perceives that others are drinking frequently, this then results that individual elevating their drinking behavior (Eisenberg, Toumbourou, Catalano, & Hemphill, 2014; Voogt, Larsen, Poelen, Kleinjan, & Engels, 2014). Brooks-Russell, Simons-Morton, Haynie, Farhat, and Wang (2014) reported findings to support the research of Eisenberg et al. (2014) and Voogt et al. (2013). Specifically, they reported that descriptive norms predicted both elevated alcohol use and future drinking with peers. In a seemingly reciprocal effect, drinking with peers in turn has also been found to increase descriptive drinking norms (Collins & Spelman, 2013). The combined research therefore indicates that majority norms have a substantial impact on individual drinking behavior. However, descriptive norms do not, independently, explain the influence of normative behavior on collegiate alcohol consumption.

Injunctive norms are also an important predictor of alcohol use. Injunctive norms have been referred to in the literature as the perceived extent to which one's peers approve of drinking (Collins & Spelman, 2013; Larimer, Turner, Mallet, & Geisner, 2004). Similarly to descriptive perceptions, these norms have also been associated with elevated drinking behavior (Neighbors et al., 2007; Talbott, Wilkinson, Moore, & Usdan, 2014). An important component of this type of norm however, is the importance of intrapersonal salience. Research has identified the varying influence peer approval has on drinking behavior (e.g., Cho, 2006), noting that increased drinking behavior only results when peer approval is valued by the individual (Neighbors et al., 2008). This is only logical, as considerations of behavioral appropriateness are irrelevant if an individual is unconcerned with the perceptions of others. It is important to note however, that certain research has noted a limited influence in regards to injunctive norms. Specifically, Foster,

Neighbors, and Krieger (2015) found that when descriptive norms and evaluations of alcohol consequences were controlled for, injunctive norms were no longer a significant predictor of alcohol use. These authors further noted that “perceived approval may only be associated with drinking because it is associated with descriptive norms” (Foster et al., 2015, p. 105).

The literature clearly demonstrates the potent influence social norms have on an individual’s consumption behavior, especially for those experiencing high levels of FoMO. For these students, social norms may provide a seemingly global reference for what their peers are doing to enjoy themselves and how they are doing it. Further, this influence would extend from both proximal to distal social levels, producing a comprehensive spectrum of intrapersonal salience. However, alcohol is not the only way college students enjoy themselves. In order to understand why alcohol might be chosen over other stimulation provided in the environment, this review now turns to differential reinforcement.

Differential reinforcement. The previously discussed concepts are closely linked with the FoMO as well as the final component of SLT, differential reinforcement. Reinforcement in the context of FoMO-motivated alcohol use seems most influential in the context of an anticipatory reward. To aid in understanding of this conceptual link, consider reinforcement in regard to the idea of alcohol expectancies. Such expectancies are also inextricably connected with the positive and negative reinforcements that might arise from drinking behavior. Phrased differently, expectancies are the anticipations individuals assume alcohol will produce when consumed. This makes positive expectancies the anticipation of what the individual might believe to be a certain reward

or reinforcement. For example, Goldstein, Wall, Werkerle, and Krank (2013) found that alcohol use was positively associated with the perceived reinforcement (i.e., social activity involvement) available if consumed. Similarly, a study assessing heavy drinking Spanish adolescents identified that a primary factor positively related to consuming was the low perceived risk of the behavior (Llorens, Barrio, Sánchez, & Suelves, 2011).

However, research indicates that the mere availability of reward is not sufficient to determine drinking behavior. For example, in circumstances that might be illegal or potentially harmful, individuals are thought to weigh the probability that negative consequences might occur given their actions, which in part contributes to their expectancy beliefs of the contraband behavior (Akers, 1990; DeMartino, Rice, & Saltz, 2013). This weighing process takes into account not only the potential negative outcomes of a behavior, but also the positive outcomes (Akers, 1990). Differential reinforcement is therefore the net difference between the perceived probability of both positive and negative outcomes (Akers, 1990; DeMartino, Rice, & Saltz, 2013). Studies have shown that individuals who both perceive, and therefore receive, reinforcement related to alcohol intake are more likely to later engage in drinking (e.g., Correia, Carey, Simons, & Borsari, 2003; Spillane, Smith, & Kahler, 2013).

Extending from Akers' (1990) original descriptions of differential reinforcement, the external motivating value of a substance can be further explained by the field of behavioral economics (Bickel, Johnson, Koffarnus, MacKillop, & Murphy, 2014). In this perspective, substances are seen in terms of a benefit/cost ratio (Walters & Rotgers, 2012b). Similarly to the idea of differential reinforcement, the choice to use a substance

instead of an alternative form of reinforcement is a result of the “benefit” in the ratio outweighing the cost. However, reinforcers are not independent of each other. In other words, reinforcers are “relative to other reinforcement available in the environment” (Walters & Rotgers, 2012b, p. 50). Given that individuals must allocate behavioral resources when obtaining reinforcers (e.g., time, money, energy) the choice made to choose such reinforcers as alcohol is directly related to these factors. Therefore, when seeking to engage in the potentially risky behavior of drinking, individuals would hope to incur the most benefit with minimal risk.

This behavioral description appropriately fits college students experiencing FoMO, who desire the most rewarding experiences. If alcohol is seen as a normative behavior, appropriate for and approved by collegiate youths, and if this substance is believed to generally enhance social interactions, then alcohol would be an easily accessible choice for an enjoyable experience with little consequence. This is particularly true when considering the connection between FoMO and social media use.

Social Media and Alcohol Use and Alcohol Priming. Social media’s increasing involvement within interpersonal culture has allowed for an unprecedented level of connection (see JWT, 2011; JWT, 2012). According to a recent Pew survey, almost three-fourths of young adults use social networking sites (SNS), with that percentage increasing to 89% among 18-29 year-olds (Social Networking Fact Sheet, 2014). Such rampant usage is not limited to computers and extends to mobile utilities, with the same source reporting 40% of people overall and 67% of 18-29 year olds utilizing a SNS on their phone (Social networking Fact Sheet, 2014). The results of such prolific interpersonal connection is mixed (e.g., Allen, Ryan, Gray, McInerney, & Walters, 2014),

but researchers have identified that emerging adults use such sites as a way to gratify certain needs, such as autonomy, identity, and intimacy (Coyne, Padilla-Walker, & Howard, 2013). This seems logical as the ultimate purpose of such online communities is, “to sustain already existing relationships or build new ones” (Blachnio, Przepiórka, & Rudnicka, 2013, p. 780), a notion supported by current research. For example, several studies have identified SNS use was due to need for connection (e.g., Bourgeois, Bower, & Carroll, 2014; Giannakos, Chorianopoulos, Giotopoulos, & Vlamos, 2014; Hesel, Banse, & Imhoff, 2015; Krishnan & Hunt, 2015). In additional research conducted by Ross et al. (2009), communication and social support were two of the fundamental motivators driving Facebook use.

Ironically however, those who frequently use SNS’s also report lower life satisfaction than those who use less frequently (Kourouthanassis, Lekakos, & Gerakis, 2015). This finding is supported by a study conducted by Kalpidou et al. (2011) who found that self-esteem was negatively related Facebook use. Other research indicates that personality characteristics are important motivators behind SNS use (e.g., Lönnqvist & Itkonen, 2014; Wang, 2013). For example, Correa, Hinsley, and de Zuniga (2010) conducted a study on a nationally representative sample of adults examining the Big Five traits in regard to Facebook use. The authors found that extraversion and openness to experience were positively related to social media use, while emotional stability was negatively related. Other authors have found similar results regarding emotional stability and its relationship to SNS use (Ross et al., 2009). Therefore, it appears that individuals with low self-esteem and high emotional volatility are prone to seeking SNS in an effort to fulfill their needs for social connection.

Coincidentally, these same personality profiles, which bear strong connections to SNS use, have also been linked to addictive behavior (e.g., Wilson, Fornasier, & White, 2010). Neuroticism, low self-esteem, and impulsivity in particular have been linked to a plethora of addictions (e.g., Bakhshipour, Alilou, & Irani, 2008; Müller, Beutel, Egloff, & Wölfling, 2014; Walther, Morgenstern, & Hanewinkel, 2012), including alcohol misuse (e.g., Kazemi, Flowers, Shou, Levine & Van Horn, 2014; McGregor, Murray, & Barnes, 2003; Roemer & Walsh, 2014). Consider further that the prospective examination conducted by Loxton, Bunker, Dingle, and Wong (2015) in which impulsivity- and anxiety- related traits were assessed as predictors of incoming college freshman alcohol use. In reference to SNS use, this research indicates that individuals who are particularly drawn to social media may also simultaneously prone to addictive behavior or vice versa. This would include the risk for alcohol misuse for individuals using social media, especially in consideration of alcohol's extensive presence on SNS. For example, a content analysis of 400 17-20-year-old's MySpace profiles revealed that 56.3% references to alcohol (Moreno et al., 2010). This same analysis further revealed that explicit use was the most common reference type. The relevance of such posts could be quite potent given that the individuals viewing this information are the peers of those who are posting it. Consider intrapersonal salience within normative behavior, in which certain behaviors are only valued if they are considered relevant to the individual viewing them (see Cho, 2006; Neighbors et al., 2008). College students value the behavior of their peers on SNSs, as evidenced by active attempts to observe such behavior. If these students are regularly, and explicitly, posting information about or including alcohol then the substance becomes increasingly salient to the observing individual.

Frequent observation of alcohol on SNSs in connection with enjoyable experiences (i.e., social gatherings, parties) would then serve as a primer for alcohol use. This could be particularly salient when considering that college students typically spend more time observing information than posting on such sites (Pempek, Yermolayeva, & Calvert, 2009). Additionally, consider the previously discussed literature on SLT assessing association in which positive pairings of alcohol resulted in both increased liking and increased consumption (Jones & Magee, 2011; Paschall, Grube, & Kypri, 2009; Ross et al., 2015). High rates of positive SNSs alcohol exposure would then, in accordance with the principles of social learning theory increase student alcohol use and potentially, misuse. This notion has received support from research examining the effects of alcohol marketing in social media, which has largely indicated that heightened exposure to alcohol-related advertisements raises consumption rates (e.g., Alhabash, McAlister, Quilliam, Richards, & Lou, 2015; Hoffman, Pinkleton, Austin, & Reyes-Velazquez, 2014). Therefore the present evidence strongly suggests that alcohol exposure is prevalent on social media, especially among college students. Further, the frequent positive presentation of this substance on SNS may increase its role as a means for achieving satisfaction. This may be particularly true for individuals seeking satisfaction, especially when considering that SNS post content is frequently related to idealized normative behavior, social enhancement, coping, and conformity motives for drinking (Westgate, Neighbors, Heppner, Jahn, & Lindgren, 2014). In other words, through social media individuals are afforded an instantaneous method to observe and identify alcohol as an easy means to a satisfactory end.

Individuals experiencing FoMO would, as a result, be particularly vulnerable to alcohol's influence on SNSs. As previously stated, researchers have identified that individuals with higher levels of FoMO engage in increased amounts of SNS use (Pryzbylski et al., 2013). Additionally, these students desire to be part of rewarding experiences and thus, would naturally seek methods to accomplish this goal. Given that one of the driving motivators of this finding are SNSs "high efficiency low friction" qualities (Pryzbylski et al., 2013), it stands to reason that methods with similar qualities might also be alluring to individuals with FoMO. When considering the common presence of alcohol on SNSs (Moreno et al., 2010) and its status within collegiate communities (see Barnett et al., 2014; Neighbors et al., 2007), the potential for alcohol's abuse among individuals with FoMO appears quite salient. However, to date no known research has tested this assumption.

FoMO as a Dispositional Variable

Before elaborating on the specific methodology used in this investigation, it is important to note the way in which FoMO will be conceptualized. According to Pryzbylski et al.'s (2013) research, FoMO is a dispositional construct, or trait, held by all individuals in greater or lesser degrees. While it may be possible, manipulating such a variable effectively is impractical given the resources available for the current investigation. As such, this study intended to emphasize certain characteristics of social situations (i.e., a party) in a manner that those high in FoMO would easily recognize as a potential "missed opportunity". This was done via guided imagery scripts.

Using such scripts as method of addictive urge induction is both an efficacious and widely used method, particularly in laboratory settings (e.g., Connor et al., 2014;

Kwako et al., 2015), that will allow for an accurate assessment of drinking behavior potential. For example, examinations of both alcohol-dependent (Singa et al., 2009) and alcohol-non-dependent (Erblich, Montgomery, & Bovbjerg, 2009) individuals have demonstrated that script-guided imagery successfully induces consummatory cravings. The strength of this effect has also been observed in participants dually addicted to alcohol and cigarettes. Consider Colamussi, Bovbjerg, and Erblich's (2007) examination in which the authors found that the application of script-guided imagery produced increased.

The Present Study

When considering the aforementioned research collectively, Fear of Missing Out (FoMO) may result in certain college students viewing drinking behavior as a high efficiency, low friction (Przybylski et al., 2013) pathway for engaging in rewarding experiences. Alcohol is well-known by many students as a social-lubricant, and at times even seen as a primary component of the collegiate lifestyle (Core Institute, 2014). This is further evidenced by normative perceptions of this substance within college populations (e.g., Core Institute, 2014; Neighbors et al., 2007). It may stand then, that alcohol is already primed as a method of increasing social connection and subsequently, providing rewarding experiences. Therefore, this investigation sought to elucidate the relationship of FoMO and alcohol within collegiate communities. This was done through the use of guided imagery scripts, which contained cues linking alcohol to potentially rewarding social experiences (experimental condition) or describing alcohol in a more neutral context (control condition). This investigation also hoped to further define the

construct of FoMO and its connections to substance use, as well as related constructs, more generally. As a result the following hypotheses were predicted:

Main Hypotheses

- 1) After accounting for individual drinking habits, alcohol outcome expectancies, drinking norms, psychological need satisfaction, age, and gender, FoMO will positively predict self-reported drinking likelihood, and this relationship will be stronger in the experimental condition, relative to the control condition.
- 2) After accounting for individual drinking habits, alcohol outcome expectancies, drinking norms, psychological need satisfaction, age, and gender, FoMO will positively predict reported alcohol craving, and this relationship will be stronger within situations that indicate alcohol will lead to rewarding experiences, relative to contexts independent of these situations.

Supplemental Hypotheses

- 3) FoMO will be significantly, positively related to reported alcohol consumption patterns.
- 4) Consistent with previous research (e.g., Przybylski et al., 2013), males will report significantly higher levels of FoMO than females.
- 5) Consistent with previous research (e.g., Slutske, 2005), males will report significantly higher levels of drinking than females.

Exploratory Analyses

Several exploratory analyses will be conducted to assess what demographic variables predict FoMO.

Method

Participants

A total of 295 participants were recruited through introductory psychology courses at the University of South Carolina Aiken's (USCA), Amazon's Mechanical Turk website, and Hanover's Psychological Research on the Net website. From this pool, 93 participants were excluded as they were not university students. This resulted in a sample of 202 participants, approximately 40% ($n = 80$) of the final sample were from USCA, approximately 35% ($n = 72$) participated through Amazon's Mechanical Turk, and approximately 25% ($n = 50$) through Hanover's Psychological Research on the Net. Participant ages ranged from 18 to 57 ($M = 23.23$). Demographically, the sample was 61.9% female ($n = 125$) and 38.1% male ($n = 77$). One-hundred and twenty-four participants reported their ethnicity as White (61.4%), 29 as Black/African-American (14.4%), 19 as Hispanic/Latino (9.4%), 15 as Asian (7.4%), and 1 as American Indian/Alaska Native (.5%). Thirteen participants either failed to answer this question, listed their ethnicity as "other", or "prefer not to answer" (6.5%). This sample consisted of 72 Freshmen (35.6%), 34 Sophomores (16.8%), 49 Juniors (24.3%), 39 seniors (19.3%), and 5 graduate students (2.5%). Approximately 95% ($n = 192$) reported using some form of social media (e.g., Facebook, Instagram, Snapchat) at least once a week, with 84.2% ($n = 170$) reporting at least daily use.

Design

The current study consisted of two conditions with different guided imagery scripts. These scripts both contained alcohol cues. However, one script described a neutral social context (control condition), while the second described a Fear of Missing

Out (FoMO) salient context designed to enhance the idea that drinking would result in a rewarding experience (experimental condition).

Measures and Instruments

Manipulation: Guided imagery scripts (Appendix A). To provide alcohol cues, elicit alcohol craving, and make FoMO salient, the present investigation utilized modified versions of Erbllich et al.'s (2009) guided imagery script for alcohol. Erbllich et al.'s (2009) investigation demonstrated that such a method is capable for producing alcohol craving and the modified content employs a situation in which the participant may “miss out” if they do not engage in drinking. The original script describes a party scene from the reader's point of view. During the scenario, the individual reading is asked to imagine attending a party at which they have elected not to drink. However, they soon smell the scent of their favorite alcoholic beverage. The scent of the beverage produces pleasant thoughts regarding taste and relaxation. This will then result in a decision to obtain the drink.

For this investigation, Erbllich et al.'s (2009) original script was modified. The setting and perspective were left unaltered but the content of two sentences were changed to reference a larger group of individuals and provide an imaginal cue implicitly highlighting how drinking might lead to social cohesion. Both the original script and modified content can be seen in *Appendix A*. In an effort to specify whether it is the social situation inducing FoMO, or the cues of alcohol itself inducing subsequent desires for alcohol, this study employed a vignette that describes alcohol within a neutral social context. This allowed for comparative control for the immediate properties of alcohol and aid in the defining the FoMO-inducing event. More specifically, this methodology

separated whether alcohol's independent properties, alcohol and FoMO's properties working in tandem, or purely FoMO's properties are responsible for changes in drinking behavior potential.

Manipulation check (Appendix B). After reading either the control or experimental guided imagery script, participants were asked to rate how much they feared they were missing out in the hypothetical scenario provided to them on a 10-point Likert scale (1 = "Not at all", 10 = "Very badly").

Self-reported likelihood to drink (Appendix C). To measure how likely an individual is to drink given their script, participants will be asked to rate on a 10-point Likert scale (1 = "Not likely", 10 = "Very likely"), how likely they would be to drink in the scenario provided situation?" (*Appendix C*).

Reported alcohol craving (Appendix D & E). To measure alcohol craving, this experiment implemented a commonly used single-item, 9-point Likert style measure ("Please rate your urge to drink an alcoholic beverage at this moment, by circling a number on the scale below"; 1 = "No Urge", 10 = "Intense Urge"; *Appendix D*) to allow for literary comparison. This experiment also utilized a broader measure, the Alcohol Craving Questionnaire Short Form Revised or the ACQ-NOW (*Appendix E*; Connolly, Coffey, Baschnagel, Drobos, & Saladin, 2009), to provide a deeper understanding of FoMO's relationship to the construct of alcohol craving. While there are multitudes of alcohol craving measures available, the purposes of this investigation require a temporally immediate assessment of alcohol craving. The ACQ-NOW allows for this through its variety of 7-point Likert-style rating questions (e.g., "If I had some alcohol I would probably drink it"; 1 = "Strongly disagree", 7 = "strongly agree"). It can be self-

administered and is quick to complete. Reviews of the ACQ-NOW have established this measure as a valid and reliable method of identifying immediate cue-elicited craving (Connolly et al., 2009).

Alcohol consumption (Appendix F)¹. To measure regular alcohol consumption patterns, the current investigation developed an independent questionnaire derived from a portion of the SMART questionnaire, which included the frequency of drinking, as well as an assessment of binge drinking, over the past year (Moskalewicz, 2013; Questionnaire Standardizing Measurement of Alcohol Related Troubles, n.d.; Thickett et al., 2013). This questionnaire contains a variety of Likert-style questions concerning both quantity and frequency (e.g., “How often did you drink beer, wine, spirits, or any other alcohol beverage, even in small amounts, in the past year?”; 1 = “Never”, 10 = “Every day”).

Alcohol expectancies (Appendix G)². To examine alcohol expectancies, this study utilized the third version of the Alcohol Expectancy Questionnaire for adults (AEQ-III; Goldman, Greenbaum, & Darkes, 1997). Individuals taking the questionnaire respond in a dichotomous fashion, marking each question within the scale as either “true” or “false”. Every item indicated as “true” of the participant is given 1-point, with items indicated otherwise receiving no points (e.g., “Drinking adds a certain warmth to social occasions”, “Drinking makes me feel good”). The total score is then summed for each subscale and results in a possible range from 0-90.

¹ Due to experimenter error, this measure was excluded from the initial part of the investigation. This resulted in 49% ($n = 99$) of the sample receiving this measure. Participants were also compared to determine any significant differences between those who completed and failed to complete this measure. These analyses demonstrated no significant differences between groups.

² Due to experimenter error, four items were excluded from the initial part of the investigation. As this measure was calculated by summing across all items, this error was corrected by averaging participant scores according to the number of items completed.

The AEQ-III is a widely used measure that consistently demonstrates both high reliability and validity (Goldman et al., 1997). In their initial analysis, Goldman et al. (1997) found that the adapted questionnaire explained 49.2% of the total drinking variance, 12 months after measurement. Further examination by Scacchi, Cristini, Trentin, and Altoè (2013) also confirmed the validity of this measure in regard to factors and structure.

Fear of Missing Out Scale (Appendix H). Fear of Missing Out (FoMO) was assessed through Przybylski et al.'s (2013) Fear of Missing Out Scale (see *Appendix H*). The scale consists of 10 5-point Likert scale questions designed to provide an examination of levels of FoMO experienced by an individual (e.g., "I fear others have more rewarding experiences than me", "It is important that I understand my friends "in jokes"). Participants then rate these questions as to how characteristic the statement is of them (1 = "Not at all true of me", 5 = "Extremely true of me"). Participants' raw scores can range from 10-50. Final scores will then be computed by averaging raw scores. FoMO is reported to be most sensitive at assessing individuals with moderate to high levels of FoMO. However, given that the original authors did not specify particular cut-off points for such categories, FoMO will be treated as a continuous variable in this investigation.

Psychological need satisfaction (Appendix I). To assess psychological need satisfaction this investigation utilized the "Basic Need Satisfaction in General" component of La Guardia, Ryan, Couchman, and Deci's (2000) Need Satisfaction Scale. This scale utilizes a 7-point Likert scale (1 = "not at all true", 7 = "very true") and the basic tenants of SDT to determine how satisfied one feels with respect to autonomy,

competence, and relatedness (e.g., “I feel pressured in my life”, “often, I do not feel very competent”).

Alcohol-related peer norms (Appendix J & K). To assess injunctive peer norms the present study employed the single-item, 4-point Likert-scale measure (1 = “disapprove”, 4 = “strongly approve”) used by Wood, Read, Palfai, and Stevenson, (2001) and Talbott et al. (2014) and seeks to assess how appropriate drinking behavior is to an individual (e.g., “How do most of your close friends feel about drinking?”). Descriptive peer norms regarding alcohol use were examined through a modified version of the Drinking Norms Rating Form (Baer, Stacy, & Larimer, 1991). This measure seeks to determine how frequently and in what quantity an individual thinks that other people drink (e.g., “How often do you think the typical college student drinks?”), using Likert-style question formats (e.g., 1 = “Less than once a month”, 10 = “Once a day”).

Demographic questionnaire (Appendix L). All participants completed a brief demographics questionnaire, developed by the present investigators, assessing age, race, sex, frequency/type of SNS use, and collegiate class status. An overview of the demographics for this investigation can be found in Table 1.

Procedure

The investigation was administered via desktop PC’s at USCA and accessed via participants’ personal computers for all web-based locations. Participants received an informed consent (*Appendix M*) upon opening the experiment on their web browser, explaining the study’s risks and benefits and told that the experiment’s purpose is to assess college student drinking patterns. Participants then completed the measures for psychological need satisfaction, injunctive drinking norms, alcohol outcome

expectancies, provided their drinking habits over the past year, descriptive drinking norms, and the FoMOs, respectively. Following completion of these measures, participants read the guided imagery script manipulation and subsequently completed the manipulation check. Participants were then asked to fill out the measures assessing drinking likelihood, each measure for alcohol craving, and lastly, the demographics questionnaire. Those completing this experiment from USCA received course credit as compensation, while participants from Amazon's Mechanical Turk received \$0.25 for compensation. Participants who completed the experiment via Hanover's Psychological Research on the Net did not receive any compensation. All ethical standards were adhered to, as specified by the approving IRB.

Results

Descriptive Statistics

Table 1 provides a summary of the demographic information collected, while Table 2 provides a summary of the descriptive statistics for this investigation. All data were screened for entry accuracy and parametric violations. Collinearity diagnostics were assessed and a correlation matrix examining each variable is provided in Table 3. These analyses demonstrated no significant correlations between predictors outside acceptable ranges (i.e., greater than $r = .80$) and further diagnostics demonstrated no VIF scores greater than 1.6 or tolerance statistics lower than .56. Other notable results from these preliminary analyses were significant relationships between FoMO and self-reported likelihood to drink ($r = .24, p < .01$), participant drinking habits ($r = .26, p < .01$), and participant alcohol expectancies ($r = .24, p < .01$). These findings suggest a significant connection between FoMO and the self-reported likelihood that someone would drink in

the provided scenarios, as well as how much that individual reported craving alcohol. Descriptive drinking norms was not significantly related to any other variables and was also excluded from later analyses.

When looking at the matrix with respect to craving, it was apparent that the ACQ-NOW had a stronger relationship with several study variables than the single-item measure. Specifically, these included participant drinking habits, alcohol outcome expectancies, FoMO scores, perceived need satisfaction (a comparison of these *r*-values can be found in Table 4). In light of these findings, and for the sake of parsimony, the ACQ-NOW was selected over the single-item measure to be used for subsequent analyses.

Means were obtained for each dependent variable (i.e., self-reported drinking likelihood and alcohol craving) in each condition and can be found in Table 5. Main effect analyses were also conducted to compare mean differences between all variables, with respect to sample location; this allowed for the identification of any significant differences in participant responding based on whether that participant came from USCA, Amazon's Mturk, or Hanover's Psychological Research on the net. Using sample location as the grouping variable, results of independent samples *t*-tests revealed no significant differences between main hypotheses variables, and the samples were subsequently merged³.

³ The only variable that differed with respect to sample location was psychological need satisfaction $t(200) = 4.64, p < .001$, which differed across all three recruitment sites. Since this variable was only used in the exploratory analyses, samples were collapsed for all other statistical testing.

Manipulation Check

After reading either the control or experimental guided imagery script, participants were asked to rate how much they feared they were missing out in the hypothetical scenario provided to them on a study specific 10-point Likert scale. Group assignment was determined randomly, utilizing SurveyGizmo's pre-programmed software, to either the control ($n = 103$) or the experimental group ($n = 99$). As expected, participants in the experimental condition reported higher feelings of FoMO, $t(200) = -8.31, p < .001, M = 5.58, SD = 2.66$, than those in the control condition ($M = 2.74, SD = 2.18$).

Hypothesis Testing

It was hypothesized that after accounting for individual drinking habits, alcohol outcome expectancies, age, gender, and drinking norms, FoMO would positively predict self-reported drinking likelihood and alcohol craving; this relationship would be stronger in the experimental condition, relative to the control condition. Two hierarchical regressions were run to determine if FoMO's relationship to both self-reported likelihood to drink and alcohol craving. These are discussed below and a summary of these results can be found in Tables 5 and 6. Means for each of these analyses can be found in Table 10, after reports of the hierarchical regression analyses.

Self-Reported drinking likelihood (Table 6). A hierarchical regression composed of three steps was run to examine the predictive power of FoMO on self-reported likelihood to drink, after accounting for participant drinking habits, alcohol outcome expectancies, injunctive norms, psychological need satisfaction, age, and gender. In the first step of this model, participant drinking habits, alcohol outcome expectancies, age,

gender, and injunctive norms were included as predictors. FoMO and condition were added in the second step of the model, with the interaction term between FoMO and condition added in the third. Given Self-reported drinking likelihood was used as the outcome variable. The first step of the model was significant, $F(6, 91) = 11.33$, $R^2 = .43$, $p < .001$, but the second, F change $(8, 89) = 8.42$, change in $R^2 = .00$, $p = .768$ and third, F change $(9, 88) = 7.50$, change in $R^2 = .00$, $p = .477$, steps failed to significantly add to this predictive power. Participant drinking history was the only significant predictor of self-reported drinking likelihood that remained in the third model ($\beta = .51$, $p < .001$). The interaction term in the second model was insignificant. These results suggest that only the drinking habits of students who completed this experiment effectively predicted how likely they would be to drink in the scenarios provided, such that higher amounts of drinking quantity and frequency predict higher levels of reported drinking likelihood.

Given FoMO's strong correlation with self-reported drinking likelihood, the present investigators sought to determine if FoMO's lack of predictive power was due to overlap in explained variance with the other predictor variables. As a result, a second hierarchical regression (Table 7) was run that maintained self-reported drinking likelihood as the outcome variable, but included only FoMO and condition in the first step, and their interaction term in the second.

The first model was significant, $F(2, 199) = 9.92$, $R^2 = .09$, $p < .01$, with both FoMO ($p < .001$, $\beta = .24$) and condition ($p = .007$, $\beta = .18$) revealed as significant predictors. However, the second model failed to significantly add to this predictive power, F change $(3, 197) = .00$, change in $R^2 = .00$, $p = .995$, and the interaction term between FoMO and condition was not significant. These results suggest that higher levels

of FoMO predicted an elevated self-reported drinking likelihood score, as did being in the experimental condition. However, it is important to note that the interaction was not significant, indicating that in either condition, higher FoMO scores predicted higher levels of self-reported drinking likelihood, and the amount of variance accounted for was minimal. This suggests that elevated FoMO levels predict elevated self-reported drinking likelihood, regardless of whether or not a situation suggests that alcohol might lead to more rewarding experiences. Additionally, these results indicate that situations in which alcohol is suggestive of socially rewarding experiences are positively predictive of self-reported drinking likelihood.

Alcohol craving (Table 8). Identical analyses to those assessing predictors of self-reported drinking likelihood were run to assess alcohol craving, as measured by the ACQ-NOW. Results demonstrated that the first step of the model was significant, $F(6, 91) = 11.90, p < .001$, the second step failed to add to this predictive power, F change $(8, 89) = 2.22, p = .115$, but the third step, F change $(9, 88) = 9.51$, change in $R^2 = .03, p = .033$, added to the models predictability (details on the specific values for each predictor can be found in Table 8). Notably, in the third model drinking habits ($\beta = .21, p = .026$), alcohol outcome expectancies ($\beta = .28, p = .002$), psychological need satisfaction ($\beta = -.36, p < .001$), gender ($\beta = -.33, p = .042$), and the interaction between FoMO and condition ($\beta = .53, p = .033$) demonstrated significance. A graphical representation of this interaction can be found in Figure 1.1. Following up this interaction, a simple slopes analysis was conducted and revealed that FoMO was a significant predictor in the experimental condition, $F(1, 45) = 9.54, p = .003, \beta = .42$, and was approaching significance in the control condition, $F(1, 52) = 3.46, p = .069, \beta = .25$.

Collectively, these results indicate that the amount of craving reported by participants in this experiment can be predicted by participant drinking habits and alcohol outcome expectancies. More specifically, higher alcohol craving was predicted by increased levels of heavy drinking and being male. When considering the significant interaction between FoMO and condition, as well as the subsequent simple slopes analysis, it further appears that when alcohol is indicative of a socially rewarding experience, participants with higher levels of FoMO experience greater levels of alcohol craving, relative to those with lower levels of FoMO.

Power check (Tables 9 & 10). Lastly, after conducting the main analyses it became a concern of the present investigators that due to the difference in sample size between participants that had completed the drinking habits questionnaire ($n = 99$) and those that had not ($n = 103$), that several of the analyses could have been underpowered. In light of this consideration, the aforementioned analyses were repeated with the predictor variable of drinking habits removed. Notable differences observed in these models were the significance of FoMO ($b = .13, p = .047$) and Condition ($b = .17, p = .008$) as predictors of self-reported drinking likelihood in the second model, $F(5, 195) = 11.09, p < .001, R^2 = .26$; and alcohol outcome expectancies ($\beta = .34, p < .001$), and injunctive drinking norms ($\beta = .19, p = .004$) as predictors of self-reported drinking likelihood in the third model, $F(8, 192) = 8.53, p < .001, R^2 = .26$. Thus, these findings further indicate that more positive perceptions of alcohol and increased perspectives of drinking as appropriate behavior predict greater levels of self-reported drinking likelihood in the scenarios provided. Additionally, as indicated in the follow up analyses to hypothesis 1, greater levels of FoMO and situations that suggest alcohol might lead to

rewarding experiences predicted greater levels of reported drinking likelihood. However, it is important to note that a lower amount of variance was explained in this model (i.e., $R^2 = .26$) than in the regression containing drinking habits (i.e., $R^2 = .43$). No notable differences were identified in the regression examining alcohol craving.

Hypothesis 3: FoMO's relationship to individual consumption patterns. A simple linear regression was run to assess if individuals' FoMO scores were predictive of self-reported drinking habits. This hypothesis was supported, $F(1, 97) = 7.06$, $R^2 = .07$, $p = .009$, $\beta = .26$, suggesting that higher scores on the FoMO scale positively predicted individuals' self-reported drinking habits.

Hypothesis 4 & 5: Gender differences. An independent samples *t*-test was run to determine if male ($n = 77$) participants reported higher levels of FoMO than females ($n = 125$). Results revealed that there was no significant difference between male FoMO scores ($M = 2.72$, $SD = .84$, $p = .684$) and female FoMO scores ($M = 2.67$, $SD = .93$), suggesting that males and females reported similar FoMO scores, $t(200) = .41$, $p = .684$.

Additional analyses were run to determine if male participants ($n = 32$) reported higher levels of drinking quantity/frequency than female participants ($n = 67$). Results supported this hypothesis, $t(99) = 2.67$, $p = .009$, suggesting that in this sample, males ($M = 13.11$, $SD = 4.59$) drank more heavily than females ($M = 10.66$, $SD = 4.30$).

Exploratory analysis (Table 11 & 12). In an effort to provide a deeper understanding of FoMO as a construct, analyses were conducted to determine what variables predicted FoMO. To assess this, a multiple regression was conducted in which age, gender, psychological need satisfaction, drinking habits, alcohol outcome expectancies, and injunctive drinking norms were loaded as predictor variables.

Unexpectedly, the model was insignificant, $F(6, 97) = 1.41$, $R^2 = .09$, $p = .185$, and none of the study variables, including age ($b = -.08$, $p = .461$) and gender ($b = .26$, $p = .25$) were identified as significant predictors of FoMO (details on the values of each predictor variable can be found in Table 11).

Following the pattern of analyses conducted during the hypothesis testing, this regression was repeated with the exclusion of drinking habits as a predictor variable, in the event that there was not enough power to detect relationships in the first model. As can be seen in Table 12, this model was significant, $F(5, 195) = 4.01$, $p = .002$, and revealed age ($b = -.15$, $p = .033$) and alcohol outcome expectancies ($b = .21$, $p = .003$) as positive significant predictors. Therefore, for this analysis it appears that being younger and having more positive expectations about alcohol's effects are predictive of elevated FoMO levels.

Discussion

A plethora of literature has identified the continuing issue of collegiate alcohol abuse (Blanco et al., 2008; Core Institute, 2014; Carter et al., 2010; Slutske, 2005), and it remains a matter of concern as to what factors are most salient in promoting this problem. One potential factor could be the phenomenon known as "FoMO". Previous research has demonstrated FoMO as a deficit in the psychological need of relatedness (Przybylski et al., 2013) and a phenomenon that appears particularly prevalent among college students and to have increased with the advent of social media technologies (JWT, 2011). Additional investigations have linked psychological need satisfaction with optimal functioning and healthy behavioral habits (Chen et al., 2015; Kipp & Weiss, 2015). While a desire for social interaction is not inherently deleterious, especially for college students,

the characteristics of FoMO, and the subsequent behaviors it might motivate, suggest this construct may be a risk factor for alcohol abuse. Therefore, the purpose of this investigation was to examine FoMO's relationship to collegiate alcohol use, as well as to replicate previously identified demographic characteristics of FoMO and to further refine the general understanding of this construct.

While the main results of this investigation were not globally supported, there were several notable findings with respect to FoMO and its relationship to alcohol craving, individual drinking habits, and psychological need satisfaction. When examined independently, without accounting for the influence of participant drinking habits, alcohol outcome expectancies, or injunctive norms, higher levels of FoMO predicted more alcohol craving and a reported higher likelihood to drink. It is important to note, however, that in light of the minimal variance explained, FoMO appeared a poor predictor at best. After accounting drinking habits, alcohol expectancies, and injunctive norms, the relationship between FoMO and self-reported drinking likelihood was no longer identified. In fact, the only variable that demonstrated predictive power was participants' drinking habits. Therefore, it appears that while FoMO is capable of predicting self-reported drinking likelihood, it does not do so over and above an understanding of one's drinking habits and expectations about alcohol, nor is this predictive ability situationally specific (i.e., only in circumstances suggesting alcohol might lead to socially rewarding experiences).

Logically this seems intuitive, as the combination of understanding an individual's recent drinking habits/history (i.e., over the past year), along with his/her current perceptions on what the substance's effects are would independently offer a high

degree of predictive power that would far overshadow FoMO's lesser predictive abilities. Indeed, the results of this investigation suggest that simply knowing one's recent drinking history is sufficient to predict how likely they report they would be to drink.

Another important aspect of these findings was the impact of condition, when FoMO and this variable were isolated as predictors of self-reported drinking likelihood. The findings of this investigation indicate that the situation itself, regardless of level of FoMO, is predictive of an individual's reported level of drinking. In particular, situations suggesting alcohol will result in socially rewarding experiences produce greater reported drinking likelihood than situations in which this connotation is absent. Again, this appears intuitive and supports the findings of previous literature that found social facilitation has the most prominent, and highly correlated, alcohol outcome expectancy among college students (Borjesson & Dunn, 2001; Pérez et al., 2005). Collectively, such information demonstrates the importance of alcohol being linked as a conduit of social rewards in the importance of drinking.

When looking at alcohol craving, participant drinking habits, alcohol outcome expectancies, psychological need satisfaction, and gender demonstrated predictive ability. Additionally, the interaction between FoMO and condition were revealed as effective predictors. Broadly speaking, FoMO was approaching significance but did not demonstrate a global relationship to alcohol craving. Therefore, based on this experiment's findings, one cannot say that greater levels of FoMO produce greater levels of alcohol craving independent of situational context. With respect to the interaction between FoMO and condition however, the present experiment's findings suggest that when alcohol is identified as a facilitator for socially rewarding experiences, those with

higher levels of FoMO will experience heightened levels of craving. In other words, those high in this trait seem to experience greater desires for alcohol as a function of the situation in which they are present (i.e., whether or not alcohol is suggestive of a socially rewarding experience).

Interestingly, males demonstrated higher levels of alcohol craving, relative to their female counterparts. This represents an area for further inquiry, as little research appears to have explicitly examined alcohol craving as a function of gender (e.g., Jayawickreme, Yasinski, Williams, & Foa, 2012). For the purposes of this paper however, this finding could be explained by the increased levels of male drinking as compared to their female counterparts (Core Institute, 2014). Additionally, this finding could be explained through influence of normative perceptions within collegiate drinking. Specifically, previous research has identified that within collegiate drinking culture, there is a significant impact masculine norms encouraging heavier alcohol use and exposure when compared to feminine norms (Kayla, Iwamoto, Grivel, Clinton, & Brady, 2016; Iwamoto et al., 2014). One could reasonably assume that elevated exposure to alcohol, greater alcohol use, and reinforcement through adherence to social norms for males would result in increased amounts of alcohol craving relative to their female counterparts.

Additionally, a notable finding from this experiment was the relationship between psychological need satisfaction and alcohol craving. Specifically, this data suggests that lower need satisfaction is predictive of greater alcohol craving. Such findings are reminiscent of previous research done by Kipp and Weiss (2015) who found that lower levels of psychological need fulfillment was predictive of reduced well-being, and

particularly increased eating disorder rates, in female gymnasts. One explanation for these results, based on the tenants of SDT (Ryan & Deci, 2000), could be that insufficient levels of need satisfaction produce motivation for compensatory behaviors to alleviate these deficits. As evidenced by the current investigation, as well as Kipp and Weiss' (2015) work, these desires may lead to maladaptive behaviors. When framed in this light, deficits in psychological need satisfaction sound as if they are the precursors to maladaptive coping skills. Future research should seek to investigate this train of thought to determine specifically how reductions in psychological need satisfaction relate to alcohol craving and other potentially deleterious desires. Ideally, such investigations would look at each of the three needs (i.e., autonomy, competence, and relatedness) separately to allow for a precise understanding of how specific deficits influence behavior.

This investigation's findings also highlight the distinction between craving and reporting acting upon such cravings. After accounting for students' drinking habits, alcohol outcome expectancies, and injunctive norms, FoMO predicted alcohol craving in situations that suggested alcohol might lead to rewarding experiences. In other words, while FoMO demonstrated a relationship to both drinking likelihood and alcohol craving, it was only able to predict the later in specific social contexts, after considering the aforementioned variables. This could reflect important aspects of the construct, demonstrating that FoMO is only relevant for individual alcohol craving when alcohol is linked to having a rewarding social experience. It could also reflect the limitations of scripts to produce accurate perceptions of behaviors within participants and/or the difference between craving and intent to use. However, it is also possible that additional

variables are mediating the link between craving and action in such situations. A variety of factors could determine whether or not craving becomes actual use, such as one's immediate access to alcohol, the potential consequences that could occur if one drinks, the individual's present level of relatedness satisfaction, or the extent to which one believes drinking in the scripted scenario would result in desired effect of social cohesion; and the ability of a scripted scenario to account for all them would be very difficult.

Ultimately however, FoMO appears to be a stronger predictor of alcohol craving than self-reported drinking likelihood. When considering that FoMO represents a threat to the psychological need of relatedness (Przybylski et al., 2013), this finding indicates the mental connection between being "left out" and seeing alcohol as a solution to that problem. This was further reflected in the finding that FoMO predicted college student drinking habits. Specifically, the higher participants scored on the FoMO scale the more extensively and/or frequently they reported drinking. Additionally, the higher one's FoMO levels, the more positive their perceptions of alcohol, as measured by the AEQ-III. One explanation for this finding is that the college students with higher FoMO scores were more frequently in social situations with alcohol than their lower FoMO-scoring peers, potentially due to their more positive perceptions of the substance's effects. When considering that FoMO motivates individuals to seek rewarding social experiences and that alcohol is a common component of social gatherings, it is possible that high-FoMO college students would find themselves in the presence of alcohol more often than their low-FoMO peers. More consistent exposure to alcohol in combination with greater

perceptions of it as a catalyst for rewarding experiences would logically produce greater elevated desire for the substance, as well as greater likelihood of consuming.

Another important finding came from further examinations of the specific predictors within the initial analyses. Specifically, this revealed a large amount of predictive overlap between drinking habits and participant AEQ scores. In other words, a student's drinking behaviors seemed closely related to their perspectives on alcohol. These results make logical sense and indicate that one's drinking behaviors reflect their perspectives on alcohol as a substance, a notion that mirrors the findings of previously conducted research. For example, Fromme and D'Amico (2000), Ham (2009), and Mezquita et al. (2015), who found that positive alcohol expectancies were indicative of increased drinking, relative to those with negative expectancies. Additionally, research conducted by Grazioli et al. (2015) demonstrated that providing particular behavioral coping strategies modified negative alcohol outcome expectancies, as well as subsequent drinking behavior. Therefore, the present investigation and prior research clearly demonstrate a strong connection between alcohol outcome expectancies and drinking behavior.

Additional examinations of individual predictors revealed several interesting findings with respect to normative perceptions of drinking. Oddly, descriptive drinking norms, which have frequently been identified as an incredibly salient factor related to collegiate drinking (e.g., Knee & Neighbors, 2002; Neighbors et al., 2007), were not related to any study variables. Given the plethora of research demonstrating a robust relationship between normative perceptions and drinking behavior, this result was surprising. Unlike descriptive norms, injunctive norms demonstrated connections to

several study variables. One explanation could have been that for participants in this sample, the drinking behaviors of others was irrelevant to their own behavior. However, given the combination of research supporting a connection between descriptive drinking norms and drinking behavior in past studies, as well as the demonstrated connections between injunctive norms and such behavior in the present study, suggests the most likely reason for this finding was measurement error (specifically, on the measure of descriptive drinking norms). If this were the case, the lack of relationship between descriptive drinking norms and study variables should not be considered accurately reflective of typical drinking behavior in college students.

In contrast to descriptive norms, injunctive norms were positively related to almost all study variables (i.e., drinking habits, alcohol outcome expectancies, alcohol craving, and likelihood to drink). This suggests that the more appropriately an individual's immediate social circle views drinking, the more likely he or she is to drink in social situations and the heavier that person engaged in drinking over the past year, relative to individuals whose immediate peer group viewed alcohol less positively. Additionally, higher injunctive norms were also related to greater levels of alcohol craving and more positive alcohol outcome expectancies. These findings are intuitive, as it would stand that if one's immediate (and likely most salient) social circle views alcohol positively, that the individual spending time in such a social circle would likewise be impacted by those beliefs.

Interestingly, injunctive drinking norms were also positively related to participant levels of FoMO. While this relationship was slight, it was nonetheless present and suggests that having an immediate peer group who has a favorable opinion of alcohol is

connected to having greater concerns that one is missing out on rewarding social experiences. One potential reason for this finding could be that college students who have higher FoMO levels, and who have associated alcohol with rewarding social events, actively seek out social groups that are more approving of alcohol in an effort to ensure closer connections to these potentially socially rewarding experiences. However, given that this finding was correlational, this can only be considered a speculation. While suggestive, future research is necessary before any conclusions can be drawn about the nature and direction of the relationship between injunctive norms and FoMO.

The final series of analyses were conducted in an effort to replicate previous research on FoMO and expand its conceptualization as a construct, as well as to replicate previously established findings on alcohol use between genders. As expected, males demonstrated higher levels of alcohol consumption quantity and frequency when compared to females. This finding has been previously demonstrated through national surveys (Core Institute, 2014), and potentially represents physical differences between the genders, as well as social pressures (e.g., Iwamoto et al., 2014). Additionally, age and alcohol outcome expectancies were predictive of participant FoMO levels. The finding that being younger was associated with higher levels of FoMO is reflective of the results identified by Przybylski et al. (2013) who also found that this construct was more prominent among younger, as opposed to older, individuals. It is interesting that more positive alcohol outcome expectancies were also associated with higher levels of FoMO. Referring back to FoMO's relationship with alcohol craving, this could reflect an association between alcohol and socially rewarding experiences. Specifically, it could be that individuals with high levels of FoMO have stronger associations of alcohol leading

to socially rewarding experiences, and therefore more favorable opinions of the substance, than their lower-FoMO level counterparts.

However, it is important to remember that this relationship emerged after drinking habits was excluded due to the variable's limited amount of power. While drinking habits and alcohol outcome expectancies demonstrated similar levels of relationship with FoMO in the correlation matrix, this investigation's data limitations preclude assumptions that alcohol outcome expectancies are a stronger predictor than participant drinking habits. Though alcohol outcome expectancies were identified while drinking habits were not in this investigation, it is crucial that future research explore these variables predictability of FoMO when both variables are equally represented within the sample.

Unexpectedly, there were no differences between males and females FoMO scores and FoMO was not correlated with psychological need satisfaction. This suggests that for this sample, males and females had similar levels of FoMO, and that participant FoMO levels were not related to their psychological need satisfaction. These findings are contrary to the initial work conducted by Przybylski et al. (2013), who found that males demonstrated higher levels of this construct than their female counter parts and described FoMO fundamentally as a deficit in psychological need satisfaction. They are also contradictory to the initial analyses that demonstrated correlations between FoMO, drinking habits, alcohol outcome expectancies, and injunctive drinking norms.

One explanation for the first difference described could be related to the sample recruited in this investigation. In Przybylski et al.'s (2013) study, while they were able to determine that males typically reported higher levels of FoMO than females. This relationship was small ($r = -.05, p = .01$) and was determined after examining over 2000

people. The magnitude of this relationship in consideration of Przybylski et al.'s (2013) sample size suggests that the current investigation had an insufficient amount of participants to detect such an effect. Nonetheless, in light of these differences in findings, replication with both large and small samples sizes are necessary before any conclusions can be drawn regarding the gender characteristics of FoMO.

It should also be noted that injunctive drinking norms were not identified as predictors of FoMO. While power may have been a factor in this instance, it is an unlikely explanation as removing drinking habits (and thus, more than doubling the sample size of the analysis) failed to demonstrate injunctive norms as a predictor of FoMO. Another more plausible explanation is that other variables (i.e., age and alcohol outcome expectancies) overshadowed the predictive power of injunctive norms. Indeed, alcohol outcome expectancies demonstrated a stronger correlation to FoMO than injunctive norms and emerged as a more prominent predictor of the construct during hypothesis testing. Therefore, it could be that injunctive norms are predictive of an individual's FoMO levels, but not more so than a person's age and alcohol outcome expectancies. Future investigators should seek to explore this line of inquiry to determine if, and to what extent, drinking norms are related to the extent that one fears missing out.

Considering these findings with respect to SDT, these findings raise questions as to the robustness of FoMO as a construct. The lack of a relationship found between FoMO and psychological need satisfaction is contrary to previous research. This could have been due to sample-specific characteristics, like those discussed in the paragraph above, or potentially because FoMO might represent a specific need (i.e., relatedness) and its connection to overall satisfaction may be obscured by other psychological

necessities (i.e., autonomy and competence). Unfortunately, examining FoMO's relatedness to each specific need was not possible given this investigation's time constraints. Future research should therefore seek to examine FoMO as it relates independently to autonomy, competence, and relatedness, in order to provide a complete picture of its role within the paradigm of psychological needs.

When considering the results of this investigation through other theoretical bases, the connection between FoMO and alcohol can be aptly explained through SLT's principles (see Akers et al., 1979; Peralta & Steel, 2010). The repeated pairing of alcohol with social experiences that occurs throughout one's life, and during college experience, offers clear opportunity for the connection of this substance with social facilitation. Regardless of this association's connotation (i.e., positive or negative), the pairing of alcohol with interpersonal interaction then introduces the cognitive understanding that alcohol will bolster one's chances of social connectivity. If one experiences FoMO, that individual is likely vigilant to opportunities for socially rewarding experiences, which for collegiate students, easily points towards utilizing alcohol. This type of connectivity for alcohol as both a social facilitator and method through which one can obtain a rewarding experience is an example of assigning meaning to a deviant form of behavior (Akers et al., 1979); this is a fundamental factor in previous explanations of substance abuse (Akers et al., 1979), as well as more contemporary understandings (e.g., Peralta & Steele, 2010).

Limitations

Despite the findings identified by the present research, there are a number of limitations that must be noted and addressed during future studies investigating FoMO and alcohol misuse. While a relatively large sample was collected, experimenter error

resulted in the exclusion of four items from the AEQ-III and the drinking habits questionnaire from the many of these students. This dramatically reduced the number of individuals who fully participated in this experiment. Though this did not preclude appropriate analyses, it is possible that the missing data could have provided crucial insight.

Secondly, a large portion of the data collected was obtained online. While numerous investigations have utilized this method and it demonstrates an acceptable level of efficacy (e.g., Brock et al., 2015; Shapka, Domene, Khan, & Yang, 2016), it nonetheless represents a reduction in experimenter control. It is possible that the same investigation conducted entirely in the presence of the investigator could obtain different results.

Additionally, this study relied heavily on self-report measures and was therefore susceptible to the influence of social desirability bias or positive impression management. For those that completed the investigation in person, this could have been exacerbated by the fact that the testing environment required participants to sit near their peers and the experimenter. While participants were assured of the anonymity of their responses, and many completed the experiment online, the possibility of such bias could still be present. One potential way to circumvent this in future investigations, would be to include a social desirability scale within the study.

Lastly, guided imagery scripts were used as the manipulation in this investigation. While those are often effective forms of experimental manipulation (e.g., Erbllich et al., 2009), they rely on the participant's abilities to imagine themselves in a hypothetical situation, as well as their willingness to partake in such an action. This requires objective

thinking about an inherently personal imaginative exercise or, if the participant does not “buy in” to the script, the reduced emotional valence of the imaginative exposure.

However, it is important to note that for this investigation the manipulation effect was effective, suggesting emotional valence was not an issue.

General Conclusions and Future Directions

Despite these limitations, the present investigation provides one of the first known examinations of FoMO and its connection to alcohol use. Results indicated that those high in FoMO demonstrate higher levels of alcohol craving when situations indicate that alcohol might lead to rewarding experiences. However, this does not translate to these individuals feeling as if they would drink in these circumstances. Future investigations should seek to explore the link between craving and intention to drink with respect to FoMO. It would be paramount in these later experiments that the situational manipulations be as salient as possible, ideally involving in vivo environments. This would hopefully overcome the limitations of guided imagery scripts.

Additionally, later research should seek to examine if individuals high in FoMO actively seek to place themselves in environments that might provide perceived solutions to their deficit in relatedness; in particular, if college students high in FoMO more often place themselves in situations that involve alcohol than their low-FoMO peers. Such research would provide invaluable insight as to the driving forces behind why FoMO was linked not only to alcohol craving, but drinking habits.

Examining the findings of this experiment from a broader perspective also bears implications outside the field of substance use (particularly when considering the predictive power demonstrated within this study, of psychological need satisfaction in

regard to both likelihood to drink and alcohol craving). While some research does exist on this topic, the connection between need satisfaction and deviant behavior is still developing. Given the importance of need satisfaction in behavioral motivation (Deci & Ryan, 2000), a stronger understanding of this connection could be crucial to the production of highly efficacious treatments for substance abuse.

As discussed in the introduction FoMO bears some semblance to social anxiety disorder and as such, is a potential risk factor for collegiate alcohol abuse. However, this study only assessed general drinking behaviors. When considering constructs such as social anxiety, which is related to problem drinking or drinking to cope (Ham, 2009; Ham et al., 2011), as well as FoMO's similarities to social anxiety (e.g., APA, 2013b), it is possible that a different pattern of findings would emerge if FoMO was examined in regard to maladaptive drinking. Social anxiety represents a potential risk factor for collegiate alcohol use typically because students with this problem who drink often use alcohol as a maladaptive coping mechanism (e.g., Ham, 2009; Ham et al., 2011). In this way, these individuals are using alcohol as a means of negative reinforcement (i.e., reducing the discomfort from an internal anxiety state by drinking). However, it remains to be seen why specifically individuals with FoMO might engage in drinking behavior. It could be that those with high levels of FoMO seek to reduce an uncomfortable internal state produced by concerns of missing out by drinking. Or, they could simply be more concerned with the rewards offered by a potentially rewarding social experience than their lower FoMO counterparts. At the current point in time, neither answer can be verified. Therefore, future research should seek to explore the nature of the connection

between these two variables, as well as how that relationship functions with respect to alcohol use.

Finally, with respect to FoMO as a construct, this research has several implications, specifically regarding the extent to which FoMO truly represents a psychological need deficit. As previously discussed, FoMO demonstrated no relationship to psychological need satisfaction in this study. It is possible that other psychological needs are functioning with respect to behavioral action, and that relatedness in and of itself was not sufficient to produce this effect. It could also be possible that FoMO's characteristics are otherwise mediated by external variables such as the amount of relatedness need satisfaction, social pressure, or the emotional salience alcohol represents to the individual. Future investigations should consider these questions important areas of concern.

Additionally, the inability of this experiment to replicate Przybylski et al.'s (2013) finding that FoMO was more prevalent in young males than females presents a point of inquiry. Given the minimal amount of research on this topic, it would be beneficial to further understand it within the general population. Future investigators should seek to expand their analyses of FoMO to community populations of differing age, ethnic, and socioeconomic. Within the field of substance use, it would also be beneficial to examine other addictive substances and activities (e.g., marijuana and gambling). By doing so, the characteristics of FoMO could be better clarified for future investigators.

Ultimately, the present investigation represents one of the initial efforts examining FoMO, and its relationship to alcohol use. Importantly, this research demonstrated a link between FoMO and alcohol craving. Such evidence provides a

starting point for future investigators of substance use in this area, along with those seeking to understand FoMO and psychological need satisfaction in general.

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Appendix A

Below are the scripts from Erbllich, Montgomery, & Bovbjerg (2009), as well as the experimenter-developed scripts.

Original, Unmodified Script

You're standing at a party chatting with a group of people you've met, munching on some snacks, enjoying the music and the cheerful mood. You decided not to drink tonight and you feel O.K. Then you get a whiff of the unmistakable smell of your favorite drink. You realize that the couple who are now standing behind you are both sipping your favorite drink. You notice them laughing and joking with each other and you think how much you'd like to have a drink in your hand. What a perfect way to enjoy a party. As you eat some more snacks, you think how good a drink would taste right now. You offer to get the next round and start to make your way toward the bar at the side of the room.

Modified Script: Experimental Condition

You're in your dorm, browsing Facebook and relaxing on a Friday evening. While looking at your newsfeed, you see several people posting photos of a party at its peak on the floor right below you. The post is titled, "An Epic Friday Night!" Everybody is drinking and appears to be having a great time. There are photos of people smiling, laughing, and you can practically hear them saying, "Cheers!", as they clink their drinks. In the midst of looking at the photos you receive a text from your friends at the party that says, "Don't miss the fun! Come over!"

Modified Script: Control Condition

You're on Facebook in your dorm after a long day of classes. It's Friday evening, and as you are looking at the posts on your newsfeed, you see not much is going on. Several of

your friends have posted they have gone home, others say they are just watching a movie and drinking a beer. Considering this quiet vibe, you decide to lay low tonight too. You want a drink and opening the fridge, you see your favorite alcoholic beverage. It's been cooling all day and as you pick it up, you can see the condensation around the label. After the long day you've had, this is just the thing you need. The drink smells perfect and your first sip is cool and refreshing. You sit down with the drink in your hand and get ready to relax for the rest of the evening.

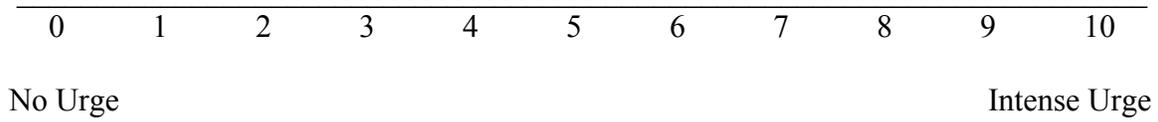
*Appendix B**Instructions:*

In the scenario you just read, how much did you feel you were missing out?

1	2	3	4	5	6	7	8	9	10
Not at all				Somewhat					Very badly

*Appendix D**Instructions:*

Please rate your urge to drink an alcoholic beverage at this moment, by circling a number on the scale below:



Appendix E

Instructions: Please indicate how much you agree or disagree with each of the following statements by placing a single checkmark (like this: X) along each line between STRONGLY DISAGREE and STRONGLY AGREE. The closer you place your checkmark to one end or the other indicates the strength of your disagreement or agreement. We are interested in how you are thinking or feeling *right now* as you are filling out this questionnaire. Please complete every item.

RIGHT NOW

1. If I had some alcohol, I would probably drink it.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

2. I miss drinking.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

3. I am *not* making plans to drink.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

4. I could not stop myself from drinking if I had some alcohol here.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

5. I want to drink so bad I can almost taste it.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

6. I would feel less irritable if I used alcohol now.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

7. If I used alcohol, I would feel less tense.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

8. Drinking would not be very satisfying.
 STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY
 AGREE

9. I would feel less restless if I drank alcohol.

STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY AGREE

10. If I were using alcohol, I would feel less nervous.

STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY AGREE

11. It would be easy to pass up the chance to use alcohol

STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY AGREE

12. Drinking would put me in a better mood.

STRONGLY DISAGREE _____ : _____ : _____ : _____ : _____ : _____ : _____ STRONGLY AGREE

*Appendix F*Questions:

How often did you drink beer, wine, spirits (e.g., vodka, gin, whisky, brandy) or any other alcoholic beverage, even in small amounts, in the past year?

- a. Every day
- b. 5-6 times a week
- c. 3-4 times a week
- d. 1-2 times a week
- e. once a month
- f. 6-11 times a year
- g. 2-5 times a year
- h. once a year
- i. I did not drink in the last 12 months, but I drank earlier
- j. I have never drank in my life

on occasions when you drank, how much did you drink (one drink = 1 beer (12 fl. oz.) = 1 glass of wine (5 fl. oz.) = 1 shot (1.5 fl. oz.)?)

- a. 0 (I never drink)
- b. 1-3 drinks
- c. 4-6 drinks
- d. 6+ drinks

on occasions when you drank, how often did you binge drink (4 or more drinks for females, 5 or more drinks for males)?

- a. Every day
- b. 5-6 times a week
- c. 3-4 times a week
- d. 1-2 times a week
- e. once a month
- f. 6-11 times a year
- g. 2-5 times a year
- h. once a year
- i. I did not binge drink in the last 12 months, but I binge drank earlier
- j. I have never binge drank in my life

Appendix G

Below is the AEQ-III. Please note, for the sake of brevity the entire scale was not included in this appendix. The full questionnaire can be found through its source (i.e., Goldman et al., 1997).

ALCOHOL EXPECTANCY QUESTIONNAIRE-III (ADULT)

Instructions: The following pages contain statements about the effects of alcohol. Read each statement carefully and respond according to your own personal thoughts, feelings and beliefs about alcohol now. We are interested in what you think about alcohol, regardless of what other people might think.

If you think that the statement is true, or mostly true, or true some of the time, then mark (X) "Agree" on the answer sheet. If you think the statement is false, or mostly false, then mark (X) "Disagree" on the answer sheet. When the statements refer to drinking alcohol, you may think in terms of drinking any alcoholic beverage, such as beer, wine, whiskey, liquor, rum, scotch, vodka, gin, or various alcoholic mixed drinks. Whether or not you have had actual drinking experiences yourself, you are to answer in terms of your beliefs about alcohol. It is important that you respond to every question.

Begin answering on Question 1. Please answer every item on the answer sheet.

PLEASE BE HONEST. REMEMBER, YOUR ANSWERS ARE CONFIDENTIAL.

ANY QUESTIONS?/Please ask the examiner.

GO ON TO THE NEXT PAGE.....

RESPOND TO THESE ITEMS ACCORDING TO WHAT YOU PERSONALLY BELIEVE TO BE TRUE ABOUT ALCOHOL (Mark "X" according to your beliefs).

Agree Disagree

- | | | |
|-------|-------|--|
| _____ | _____ | 1. Alcohol can transform my personality. |
| _____ | _____ | 2. Drinking helps me feel whatever way I want to feel. |
| _____ | _____ | 3. Some alcohol has a pleasant, cleansing, tingly taste. |

- _____ 4. Alcohol makes me feel happy.
- _____ 5. Drinking adds a certain warmth to social occasions.
- _____ 6. Sweet, mixed drinks taste good.
- _____ 7. When I am drinking, it is easier to open up and express my feelings.
- _____ 8. Time passes quickly when I am drinking.
- _____ 9. When they drink, women become more sexually relaxed.
- _____ 10. Drinking makes me feel flushed.
- _____ 11. I feel powerful when I drink, as if I can really influence others to do as I want.
- _____ 12. Drinking increases male aggressiveness.

ANSWER ACCORDING TO YOUR CURRENT PERSONAL BELIEFS

- _____ 13. Alcohol lets my fantasies flow more easily.
- _____ 14. Drinking gives me more confidence in myself.
- _____ 15. Drinking makes me feel good.
- _____ 16. I feel more creative after I have been drinking.
- _____ 17. Having a few drinks is a nice way to celebrate special occasions.
- _____ 18. I can discuss or argue a point more forcefully after I have had a few drinks.
- _____ 19. When I am drinking I feel free to be myself and to do whatever I want.

GO ON TO NEXT PAGE.....

- _____ 20. Drinking makes it easier to concentrate on the good feelings I have at the time.
- _____ 21. Alcohol allows me to be more assertive.
- _____ 22. When I feel “high” from drinking, everything seems to feel better.
- _____ 23. A drink or two makes the humorous side of me come out.

ANSWER ACCORDING TO WHAT YOU PERSONALLY BELIEVE NOW

Appendix H

Below is the FOMOs (Przybylski et al., 2013) as it was presented to participants.

Instructions:

Below is a collection of statements about your everyday experience. Using the scale provided please indicate how true each statement is of your general experiences. Please answer according to what really reflects your experiences rather than what you think your experiences should be. Please treat each item separately from every other item.

Response Scale:

Not at all true of me		1
Slightly true of me		2
Moderately true of me		3
Very true of me		4
Extremely true of me		5

Questions:

- ___ 1. I fear others have more rewarding experiences than me.
- ___ 2. I fear my friends have more rewarding experiences than me,
- ___ 3. I get worried when I find out my friends are having fun without me.
- ___ 4. I get anxious when I don't know what my friends are up to.
- ___ 5. It is important that I understand my friends "in jokes".
- ___ 6. Sometimes, I wonder if I spend too much time keeping up with what is going on.
- ___ 7. It bothers me when I miss an opportunity to meet up with friends.
- ___ 8. When I have a good time it is important for me to share the details online (e.g. updating status).
- ___ 9. When I miss out on a planned get-together it bothers me.
- ___ 10. When I go on vacation, I continue to keep tabs on what my friends are doing.

Appendix I

Please read each of the following items carefully, thinking about how it relates to your life, and how true it is for you. Use the following scale to respond.

1	2	3	4	5	6	7
not at all			somewhat			very
true			true			true

1. I feel like I am free to decide for myself how to live my life.
2. I really like the people I interact with.
3. Often, I do not feel very competent.
4. I feel pressured in my life.
5. People I know tell me I am good at what I do.
6. I get along with people I come into contact with.
7. I pretty much keep to myself and don't have a lot of social contacts.
8. I generally feel free to express my ideas and opinions.
9. I consider the people I regularly interact with to be my friends.
10. I have been able to learn interesting new skills recently.
11. In my daily life, I frequently have to do what I am told.
12. People in my life care about me.
13. Most days I feel a sense of accomplishment from what I do.
14. People I interact with on a daily basis tend to take my feelings into consideration.
15. In my life I do not get much of a chance to show how capable I am.
16. There are not many people that I am close to.
17. I feel like I can pretty much be myself in my daily situations.
18. The people I interact with regularly do not seem to like me much.
19. I often do not feel very capable.
20. There is not much opportunity for me to decide for myself how to do things in my daily life.
21. People are generally pretty friendly towards me.

Appendix J

Instructions: Please circle one of the answer choices.

How do most of your close friends feel about drinking?

1	2	3	4
Disapprove	Neither Approve nor Disapprove	Approve	Strongly Approve

Appendix K

Below is the Drinking Norms Rating Form as it was presented to participants (Baer et al., 1991).

Drinking Norms Rating Form

Instructions	A. How often they drink	B. How much they drink on a typical weekend evening
<p>We are interested in your estimates of A) <i>How often</i> and B) <i>How much</i> different types of people drink. For the following questions, please assume whenever possible that you are <i>rating a typical person of your same sex. in each of the following situations, please enter the corresponding number, giving one answer for (A) (1-7), and one answer for (B) (1-6).</i></p>	<p>1. Less than once a month 2. About once a month 3. Two or three times a month 4. once or twice a week 5. Three or four times a week. 6. Nearly every day 7. once a day</p>	<p>1. 0 drinks 2. 1-2 drinks 3. 3-4 drinks 4. 5-6 drinks 5. 7-8 drinks 6. More than 8 drinks</p>
3. An average college- bound senior in high school		
4. An average university student		
5. An average college student residing in a fraternity		
6. An average college student residing in a sorority		
7. An average college student residing in dormitory/residence hall		
8. An average college student residing with his/her parents		
9. An average college student residing in his/her own residence		
10. Your closest friends		

Appendix L

- 1) What is your age? _____
- 2) What is your biological gender (Please circle one)? **M** **F**
- 3) What is your race/ethnicity (e.g., Caucasian, Hispanic)? _____
- 4) What is your class status (e.g., Freshman, Junior)? _____
- 5a) What type of social networking site (e.g., Facebook, Myspace, Foursquare) do you use? _____
- 5b) How frequently do you use this social media?
 - a. Multiple times a day
 - b. once a day
 - c. once every few days
 - d. once a week
 - e. A few times a month
 - f. once a month
 - g. Less than once a month or never

*Appendix M***Informed Consent Form**

You are being asked to participate in a research project examining collegiate drinking habits. The persons responsible for this project are Noah Wolkowicz and Dr. Maureen Carrigan.

The total duration of your participation will be approximately 45 minutes.

Risks/Discomfort and benefits to the participants- it is believed that the participants should experience no risks or discomforts. A potential benefit is that, based upon the response to the questionnaires, the participants may come to have a better understanding of psychological research.

In return for the time invested in this project as a participant, you will receive credit toward a requirement in your Psychology 101 classes, as stated in the course syllabus or as described by your instructor.

Only Dr. Maureen Carrigan and the principal student investigator, Noah Wolkowicz, will have access to the identifiable records and/or data collected for this study; and all data associated with this study will remain strictly confidential.

Participation is voluntary. There is no penalty for refusal to participate. You may withdraw from the experiment at any time.

All questions and concerns should be sent to wolkowin@usca.edu.

This is to certify that I consent to or give permission for my participation as a volunteer in this research study. I have read this form and understand the content.

****IF YOU ARE NOT 18 YEARS OF AGE OR OLDER YOU MAY NOT PARTICIPATE IN THIS EXPERIMENT.**

Table 1

Demographics

Characteristic	N = 202
<u>Age (years)</u>	
Mean	23.23
Standard Deviation	6.31
Range	39 (18-57)
<u>Gender</u>	
Male	77 (38.1%)
Female	125 (61.9%)
<u>Race</u>	
White	124 (61.4%)
Black/African American	29 (14.4%)
Hispanic/Latino	19 (9.4%)
Asian	15 (7.4%)
American Indian/Alaska Native	1 (0.5%)
Other	9 (4.5%)
Prefer not to answer	4 (2%)
<u>Class Status</u>	
Freshman	72 (35.6%)
Sophomore	34 (16.8%)
Junior	49 (24.3%)
Senior	39 (19.3%)
Other	8 (4%)

Table 2
Descriptive Statistics for Measures

Measure	<i>M</i>	<i>SD</i>	Range
Manipulation Check	4.13	2.81	1.00 – 10.00
Drinking Likelihood	5.40	2.92	1.00 – 10.00
9-point Alcohol Craving	3.18	2.41	1.00 – 9.00
ACQ-NOW	3.29	.96	1.50 – 5.50
Drinking History	11.58	4.55	3.00 – 19.00
AEQ	.54	.26	0.00 – 1.00
FoMO	2.69	.90	1.00 – 5.00
Need Satisfaction	187.22	53.39	68.00 – 278.00
Injunctive Norms	2.84	.80	1.00 – 4.00
Descriptive Norms	43.04	19.94	11.00 – 213.00

Table 3
Correlation Matrix

	1	2	3	4	5	6	7	8	9
1. LDS	-								
2. AC9	.45**	-							
3. ACQ-NOW	.44**	.60**	-						
4. DH	.63**	.37**	.45**	-					
5. AEQ	.43**	.37**	.43**	.43**	-				
6. FoMO	.24**	.27**	.32**	.26**	.25**	-			
7. PNS	-.09	-.19**	-.43**	-.12	-.09	-.09	-		
8. IN	.30**	.20**	.21*	.43*	.23*	.15*	-.07	-	
9. DN	.01	.00	.13	.01	.19	.04	.10	.03	-

* $p < .05$, ** $p < .01$

Note: LDS = Likelihood to Drink Scale, AC9 = 9-point scale of alcohol craving, DH = Drinking History, AEQ = Alcohol Expectancy Questionnaire III, PNS = Perceived Need Satisfaction, IN = Injunctive Norms, DN = Descriptive Norms

Table 4

Comparison of r-values for AC9 and ACQ-NOW

Variable	AC9	ACQ-NOW
DH	$r = .37^{**}$	$r = .45^{**}$
AEQ	$r = .37^{**}$	$r = .43^{**}$
FoMO	$r = .27^{**}$	$r = .32^{**}$
PNS	$r = -.19^{**}$	$r = -.43^{**}$
IN	$r = .20^{**}$	$r = .21^{**}$

$*p < .05$, $**p < .01$

Note: AC9 = 9-point scale of alcohol craving, DH = Drinking History, AEQ = Alcohol Expectancy Questionnaire III, FoMO = Fear of Missing Out, PNS = Perceived Need Satisfaction, IN = Injunctive Norms

Table 5
Means for Dependent Variables by Condition

Variable	Condition	
	Control	Experimental
LDS	4.89	5.93
ACQ-NOW	3.19	3.41

Note: Self-reported Likelihood to Drink (LDS)

Table 6
Summary of Hierarchical Regression Analyses for Hypothesis 1: Self-Reported Likelihood of Drinking

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
DH	.33	.06	.52**	.32	.06	.51**	.32	.06	.51**
AEQ	1.12	.94	.11	1.11	.97	.10	1.02	.98	.09
IN	.36	.30	.11	.35	.31	.11	.35	.31	.11
PNS	-.01	.00	-.15	-.01	.01	-.14	-.01	.01	-.14
Age	.00	.04	.00	.00	.05	.00	.00	.05	.01
Gender	.21	.49	.04	.24	.50	.04	.25	.50	.04
FoMO				.22	.26	.07	.37	.36	.12
Condition				.27	.47	.05	1.04	1.42	.19
FoMO*C							-.36	-.50	-.18
R ²		.43			.43			.43	
<i>F</i> -value		11.33**			8.42**			7.50**	

Note: Drinking Habits (DH), Alcohol Expectancies Questionnaire (AEQ), Injunctive Norms (IN), Psychological Need Satisfaction (PNS), Fear of Missing Out (FoMO), FoMO by Condition (FoMO*C).
 * $p < .05$, ** $p < .01$

Table 7
*Summary of Hierarchical Regression Analyses for Independent
 Analysis of FoMO: Self-Reported Likelihood of Drinking*

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
FoMO	.79	.22	.24**	.79	.31	.24*
Condition	1.07	.39	.18**	1.08	1.25	.19
FoMO*C				.00	.44	.00
R ²		.09			.09	
<i>F</i> -value		9.12**			6.58**	

Note: Fear of Missing Out (FoMO), FoMO by Condition (FoMO*C).

* $p < .05$, ** $p < .01$

Table 8

Summary of Hierarchical Regression Analyses for Hypothesis 2: Alcohol Craving

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
DH	.05	.02	.24**	.05	.02	.21**	.05	.02	.21**
AEQ	.92	.32	.25**	.93	.32	.26**	1.03	.32	.28**
IN	-.02	.10	-.02	-.03	.10	-.03	-.03	.10	-.03
PNS	-.01	.00	-.40	-.01	.00	-.37**	-.01	.00	-.36**
Age	-.02	.02	-.14	-.02	.02	-.11	-.02	.01	-.13
Gender	-.35	.16	-.18*	-.33	.16	-.17*	-.33	.16	-.17*
FoMO				.17	.08	.16 ^a	-.01	.12	-.01
Condition				.15	.16	.08	-.77	.46	-.40
FoMO*C							.35	.16	.53*
R ²		.44			.47			.49	
<i>F</i> -value		11.90**			9.72**			9.51**	

Note: Drinking Habits (DH), Alcohol Expectancies Questionnaire (AEQ), Injunctive Norms (IN), Fear of Missing Out (FoMO), FoMO by Condition (FoMO*C).

* $p < .05$, ** $p < .01$, ^a $p = .054$ (marginally significant value)

Table 9

Summary of Hierarchical Regression Analyses for Power Check: Self-Reported Drinking Likelihood

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
AEQ	4.07	.74	.36**	3.85	.74	.34**	3.85	.74	.34**
IN	.79	.24	.22**	.68	.23	.19**	.68	.23	.19**
Age	.01	.03	.02	.02	.03	.04	.02	.03	.03
Gender	-.17	.39	-.03	-.26	.38	-.04	-.26	.39	-.04
PNS	.00	.00	-.02	.00	.00	.02	.00	.00	.02
FoMO				.42	.21	.13*	.42	.30	.13
Condition				.98	.37	.17**	.95	1.15	.16
FoMO*C							.38	.49	-.16
R ²		.22			.27			.27	
<i>F</i> -value		28.77**			17.79**			14.16**	

Note: Drinking Habits (DH), Alcohol Expectancies Questionnaire (AEQ), Injunctive Norms (IN), Perceived Need Satisfaction (PNS), Fear of Missing Out (FoMO), FoMO by Condition (FoMO*C).

* $p < .05$, ** $p < .01$

Table 10

Summary of Hierarchical Regression Analyses for Power Check: Alcohol Craving

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
AEQ	1.16	.31	.36**	1.15	.31	.32**	1.25	.31	.34**
IN	.08	.10	.07	.05	.10	.05	.06	.09	.05
Age	-.03	.02	-.15	-.02	.02	-.12	-.02	.02	-.14
Gender	-.45	.16	-.23**	-.41	.16	-.21*	-.42	.16	-.21*
PNS	-.01	.00	-.41**	-.01	.00	-.37**	-.01	.00	-.36**
FoMO				.19	.09	.18*	.02	.19	-.36
Condition				.20	.16	.11	-.69	.47	-.36
FoMO*C							.34	.17	.51*
R ²		.40			.44			.46	
<i>F</i> -value		12.32**			10.04**			9.62**	

Note: Drinking Habits (DH), Alcohol Expectancies Questionnaire (AEQ), Injunctive Norms (IN), Perceived Need Satisfaction (PNS), Fear of Missing Out (FoMO), FoMO by Condition (FoMO*C).

* $p < .05$, ** $p < .01$

Table 11
Summary of Multiple Regression for Exploratory Analyses

Model 1			
Variable	<i>B</i>	<i>SE B</i>	β
Age	-.01	.02	-.08
Gender	-.23	.20	-.12
PNS	.00	.00	-.08
AEQ	.28	.39	.08
DH	.03	.03	.13
IN	.07	.13	.07
R ²		.09	
<i>F</i> -value		1.51	

* $p < .05$, ** $p < .01$

Note: Psychological Need Satisfaction (PNS), Alcohol Outcome Expectancies (AEQ), Drinking Habits (DH), Injunctive Norms (IN)

Table 12

Summary of Multiple Regression for Exploratory Analyses: Drinking habits removed as a predictor

Model 1			
Variable	<i>B</i>	<i>SE B</i>	β
Age	-.02	.01	-.15*
Gender	.00	.13	.00
PNS	.00	.00	-.09
AEQ	.74	.25	.21**
IN	.10	.08	.09
R ²		.31	
<i>F</i> -value		4.01**	

* $p < .05$, ** $p < .01$

Note: Psychological Need Satisfaction (PNS), Alcohol Outcome Expectancies (AEQ), Drinking Habits (DH), Injunctive Norms (IN)

Figure 1.1. Interaction between FoMO and Condition on Participant Alcohol Craving

