3-13-2017

Where is the Party Tonight? The Impact of Fear of Missing Out on Peer Norms and Alcohol Expectancies and Consumption among College Students

Amna Al Abri
University of Connecticut, amna.al-abri@uconn.edu

Where is the Party Tonight? The Impact of Fear of Missing Out on Peer Norms and Alcohol Expectancies and Consumption among College Students

Amna Al Abri

University of Connecticut, 2017

Abstract

Background. Little is known about how the excessive drinking culture entrenched in college social life influences the fear of missing out (*FOMO*) on the binge drinking experience among college students and how such fear plays in the mechanisms linking various risk factors with binge drinking intentions.

Objectives. The main objectives of this dissertation were to 1) extend previous research on the general fear of missing out (FOMO) by investigating the effects of perceived peripherality, the need to belong, and fear of social exclusion, 2) develop and validate a self-report measure of alcohol-related FOMO, and 3) assess the role of alcohol-related FOMO in increasing binge drinking intentions through mediating the effect of alcohol positive expectancies, reducing alcohol negative expectancies, and enhancing susceptibility to peer norms.

Method. A college student sample (N = 490; 66.3% female) completed a one-shot survey. Self-report data was analyzed using correlational and regression analyses, exploratory and confirmatory factor analyses, and structural equation modeling along with mediation, moderation, and multi-group analyses.

Results. The need to belong emerged as the best predictor of FOMO, accounting for most of its explained variance. With regard to the scale development, factor analyses supported an 18-item multidimensional scale tapping the *alcohol-related FOMO (ALFOMO)*. The scale demonstrated good internal consistency, satisfied the requirements for convergent, discriminant, and criterion-

related validity, and was free of gender bias. Additionally, ALFOMO was a significant focal predictor of binge drinking intentions. It significantly mediated the effect of alcohol positive expectancies, reduced the severity of negative expectancies, and mediated and moderated the positive effect of peer descriptive norms.

Conclusions. This dissertation presents the development and initial validation of the alcohol-related FOMO scale. The present work also provides the first theoretical and empirical investigation of the alcohol-related FOMO in relation to alcohol expectancies, peer norms, and binge drinking intentions. Results confirm that the ALFOMO scale is a promising measure and provide evidence for its indispensability in future research and interventions. Contributions, implications, and limitations are further discussed in light of the findings.

Keywords: Fear of Missing Out (*FOMO*), alcohol-related FOMO (*ALFOMO*), binge drinking, alcohol expectancies, peer norms

Where is the Party Tonight? The Impact of Fear of Missing Out on Peer Norms and Alcohol Expectancies and Consumption among College Students

Amna Al Abri

B.A., Sultan Qaboos University, **[2004]**

M.A., University of Queensland, **[2006]**

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

at the

University of Connecticut

[2017]

APPROVAL PAGE

Doctor of Philosophy Dissertation

Where is the Party Tonight? The Impact of Fear of Missing Out on Social Norms and Alcohol Expectancies and Consumption among College Students

Presented by

Amna Al Abri, B.A., M.A.

Major Advisor

_____

Leslie B. Snyder

Associate Advisor

_____

Mark Hamilton

Associate Advisor

_____

John Christensen

University of Connecticut

[2017]

Acknowledgement

Six years ago, I embarked on the PhD journey with great elation and ardor. Those six years have been the most turbulent yet the most gratifying years of my life. Although the PhD journey was filled with constant challenges, uncertainties, self-doubts, numerous moments of despair, angst and panic, it made me venture into unknown territories, explore new horizons, and outgrow myself. As I finally reach my destination today, I can testify that the journey that frequently felt like a taxing unending venture was the most worthwhile journey I have ever taken. It has enriched me emotionally, personally, and intellectually and I am forever grateful. Now that the journey is coming to an end, I want to take a moment to express my gratitude and appreciation to the people who have been part of it. There is absolutely no way I could have done it without the continuous support of people around me.

First and foremost, all praises and gratitude are due to Allah for He taught me what I didn't know, gave me the courage, strength, and resilience to persevere in the face of challenges and turmoil, and He gave and gave and gave.

I would like to express my sincere gratitude to the Ministry of Higher Education in Oman, for providing me with the full PhD scholarship. I would not have been able to do the PhD without their funding and support. They believed and invested in me and I am so much looking forward to joining the team there and making a difference with the knowledge and skills I have gained.

During my PhD years, I have been very fortunate to learn from and work with some of the most accomplished scholars in the communication, persuasion, and health fields. I owe a big thank you to my advisory committee who has provided me with constant support and

constructive feedback. Dr. Mark Hamilton and Dr. John Christensen have both been an integral part of the process and I will forever be grateful to their support and valuable insights.

I would also like to express my deepest appreciation and gratitude to my major advisor, Dr. Leslie Snyder, who has helped me with every milestone and has been a remarkable scholar, advisor, and mentor. There is no absolutely no way I could have accomplished what I have today without her support and guidance. She has pushed me to the limits and helped me reach my highest potential. Her passion for scientific research and unrelentless curiosity and desire to explore and develop new ways of looking at data will always be an inspiration for me. To her, I owe my statistical knowledge and confidence in pursuing scientific research. I will forever be indebted and grateful to you, Leslie.

I would also like to extend my thanks to Leon Clark, who has been the closest confident during this journey. Leon, you seriously deserve an honorary PhD for putting up with me. There are no words that could express my sincere gratitude and appreciation. Thank you for always being there during times of joy and times of despair. Thank you for sharing with me the bitter-sweet moments of this long endeavor.

I owe a special thank you to my friend and ex-neighbor, Sean Kennedy, whose friendship will undoubtedly last a lifetime and the memories and adventures we shared will always be cherished. Sean, thank you for being the friend that I needed. Thank you for welcoming me into your family. Many thanks to your wonderful and loving family for always receiving me with open arms and making me feel like home. Thank you for the many delightful thanksgiving and Christmas dinners. I will forever be grateful and indebted to you and your loving family. Peace and love will definitely prevail if the world had more welcoming families as yours.

I would also like to express my thanks and gratitude to my family for their love and constant support during this journey. Mom, your prayers and love, thousands of miles away, were the most comforting during rough and daunting times. Dad, it is finally done. To my brother, Zaher, thank you for believing in me and for being my biggest fan. To Azza, thank you for being the sister that I needed. Talking to you has always been reassuring and helped me put things in perspective.

I would also like to thank my fellow graduate students who shared the same journey. Special thanks to Anne Borsai, who has been my companion in this journey from day one. We shared many research projects and so many fears, aspirations and dreams. We are finally done, Anne. Yaay!

Finally, I cannot go without thanking and expressing my gratitude to Roger Ledsham, one of the wisest people I have ever met. He was the friend I sought when I needed advice. Roger has always believed in me when I didn't believe in myself. He was the inspiration for pursuing the PhD program. Roger, I will forever be grateful for your friendship.

"Now, it is time to turn the page."

Table of Contents

Tables

Figures

Chapter 1

Introduction

1.1. Background

College drinking remains a national health concern, with 67% of college students reporting alcohol consumption in the preceding month and 37.4% of them reporting binge drinking (i.e. consuming ≥ 5 or ≥ 4 standard drinks in one occasion, for males and females, respectively) at least once in the past two weeks (Johnston, O'Malley, Bachman, & Schulenberg, 2010; 2013). Risky alcohol use accounts for more than 1800 deaths and is linked to two-thirds of suicide cases and 600,000 accidental injuries among college students each year in the United States (Centers for Disease Control and Prevention [CDC], 2007; Hingson et al., 2005, 2009; Oster-Aaland, Lewis, Neighbors, Vangsness, & Larimer, 2009). The negative consequences of excessive college drinking are also widely documented at the physical level (Antai, Lopez, Antai, & Anthony, 2014; Kilmer, Cronce, & Larimer, 2014) as well as the academic performance level (Porter & Pryor, 2007; Singleton & Wolfson, 2009; White & Hingson, 2014; Whitt et al., 2007), and they go beyond the individual harm to affect the community at large through violence, driving under the influence, and sexual assault and abuse (Hingson et al., 2005, 2009; Dowdall, 2012; Perkins, 2002).

Although binge or heavy episodic drinking is a major public health concern facing all young people, college students have been constantly singled out as the most at-risk group, with the highest prevalence and severity of alcohol-related problems (Center for Behavioral Health Statistics and Quality, 2015; Johnston, O'Malley, Bachman, & Schulenberg, 2013; National Centre on Addiction and Substance Abuse at Columbia University, 2007; Office of the Surgeon General, 2007; Wechsler & Nelson, 2008). Researchers confirmed that most heavy drinking in

college occurs in social settings where the availability of alcohol and lack of adult supervision offer plenty of opportunities to engage in excessive drinking (Baer, 2002; Gibbons, Gerrard, & Lane, 2003; Neighbors, Larimer, & Lewis, 2004; Vander Ven, 2011). College social life has become synonymous with alcohol consumption, creating a culture where excessive drinking is relatively normative and reinforcing the association between alcohol and social functioning.

Further support for the social underpinnings of college alcohol consumption comes from two streams of research: social norms and alcohol expectancies. An overwhelming amount of research has indicated that college drinking is largely driven by social norms (Baer, 2002; Borsari & Carey, 2003; Jacob & Leonard, 1994; Perkins, Haines, & Rice, 2005; Perkins & Wechsler, 1996) and is robustly associated with social enhancement expectancies (Bradley, Carman, & Petree, 1992; Haden & Edmundson, 1991).

Despite the empirical certainty of the social underpinnings of college alcohol consumption, the existing research has so far ignored what may be a fundamental part of the process, namely *Fear of Missing Out* or *FOMO*, defined as an all-consuming apprehension that others are having more rewarding experiences from which one is absent (Przybylski, Murayama, DeHaan, & Gladwell, 2013). A basic assumption of the researcher's current approach to FOMO is that it is a reward-driven and risk-aversive motivational state that is capable of steering behavior towards risk-taking.

1.2. The Present Dissertation

The main objectives of this dissertation are to 1) extend previous research on the general fear of missing out (FOMO) by investigating the effects of perceived peripherality, the need to belong, and fear of social exclusion from the group, 2) develop and validate a self-report measure of alcohol-related FOMO among college students, and 3) assess the role of alcohol-

related FOMO in increasing binge drinking intentions among colleges students. Alcohol-related FOMO is expected to increase binge drinking intentions through mediating the positive effect of alcohol positive expectancies, reducing alcohol negative expectancies, and enhancing susceptibility to peer descriptive and injunctive norms.

1.3. Significance of the Dissertation

In addition to the scarcity of empirical undertakings of FOMO, the existing literature has not been concerned with how it might play a role in risky behavior in the health domain. To that end, this dissertation proposes to bridge this gap by examining the relationship between alcohol-related FOMO and alcohol expectancies, peer norms, and binge drinking intentions. Additionally, this dissertation should contribute to the empirical scholarship of college drinking, which has been a national concern for decades. Disentangling the underlying mechanism linking expectancies and peer norms with alcohol-related FOMO and binge drinking intentions and addressing the nuanced nature of the process should also inform both future college drinking interventions and theoretical models of risky behavior.

This dissertation consists of six chapters. The first chapter sets out the general background and significance of the topic. The second chapter focuses on the theoretical framework and hypotheses. The third chapter delineates the method and procedures of the study. The fourth chapter is devoted to the development and validation of the alcohol-related FOMO scale. The fifth chapter presents the results and the sixth chapter provides a discussion of the results and their implications for future research and interventions.

Chapter 2

Literature Review

2.1. Fear of Missing Out (FOMO): Theoretical and Empirical Support

Fear of Missing Out (FOMO) was first described in the contemporary lexicon as "fear that if you miss a party or an event, you will miss out on something great" (Beaqon, 2006). FOMO is now defined as "a pervasive apprehension that others might be having rewarding experiences from which one is absent" and is characterized by "the desire to stay continually connected with what others are doing" (Przybylski, Murayama, DeHaan, & Gladwell, 2013). FOMO is often discussed as an all-consuming feeling that is associated with mental and emotional strains and caused by a compulsive concern that one is missing an opportunity for a social interaction or a rewarding experience or not being in the know (Dossey, 2014; Vaughn, 2012). In addition to the apprehension feelings, FOMO can be manifested in the form of compulsive behavior, most notably in the form of the compulsive refreshing of social media feeds (Reagle, 2015).

Although it is commonly discussed as an emerging social-media-bound phenomenon, FOMO is thought to be as old as the human race, playing a vital role in its survival (Abel, Buff, & Burr, 2016; Reagle, 2015; Sanz, 2015; Vaughn, 2012). Sanz (2015) states, "Our survival as an individual within a tribe, and thus our survival as a species, once hinged on our being aware of threats both to ourselves and to the larger group … To not be aware of a new food source, for example, meant you literally missed out on something that could mean the difference between life and death."

FOMO has, however, evolved from a survival mechanism into, recently, a chronic state of hyper-vigilance and agitation due to the influence of social media (Abel, Buff, & Burr, 2016;

Beck, 2013). It is social media that made it easier for those who skew towards FOMO to keep taps on what others are doing. Uneasiness is often experienced as a result of glancing at a stream of social network posts, photos, and videos featuring the fun that peers are having (Dossey, 2014; Eyal & Luman, 2016; Vaughn, 2012).

Research focusing on FOMO in the context of social media indicates that 4 out of 10 young people experience FOMO and that young men are particularly vulnerable to FOMO (Przybylski et al., 2013; Vaughn, 2012). FOMO served as a mediator linking deficits in self-regulation (i.e. connectedness, autonomy, and relatedness) and poor social media use (Przybylski et al., 2013). Despite reporting overwhelmed by the amount of information available on various social media platforms, individuals "still continue to absorb as much as possible," and experience missing out if they are not up-to-date with what others are "doing, saying, or even buying" (Abel, Buff, & Burr, 2016, p. 35).

In addition to social media, FOMO can be contextualized in the marketing and consumer behavior research. FOMO has been discussed as a motivating force behind financial decisions such as market expansion and the rush to invest in risky assets or the maintenance of a business, despite low profits (Bond, 2015; Saft, 2015; Vaughn, 2012). FOMO, in such scenarios, reflects hopes for gains and capitalizes on the fear of missing out on potential opportunities for maximizing wealth. FOMO becomes more pronounced as the individual tries to keep pace with competitors and high levels of FOMO have been associated with less sensitivity to risks (Saft, 2015).

FOMO is also associated with scarcity messages, better known as limited (i.e. time or quantity) promotional offers. Scarcity has long been used as a potential marketing strategy—tapping into the anxiety of missing out on products and deals and creating an urgency to act

(Aggarwal, Jun, & Huh, 2011; Cialdini, 2008; Jang, Ko, Morris, & Chang, 2015). The underlying principle behind scarcity messages is that by limiting availability, offers seem so tempting and fleeting that one feels compelled to seize them (Aggarwal et al., 2011; Nagpal, 2014). They work through instigating feelings of fear and anticipated regret as well as inducing a sense of urgency to act and unwillingness to be left behind (Cialdini, 1993; Vaughn, 2012).

2.2. FOMO: Effects of Perceived Peripherality, Need to Belong, & Fear of Social Exclusion

It is worth noting that the current approaches towards FOMO has so far been psychological — mainly tapping the psychological motivations of FOMO — and has not benefited as much from the advances made within social and cognitive psychology. Given that FOMO is a social comparison at heart, bringing into consideration the social context in which the individual is embedded can offer many unique insights. Sensitivity to fear of missing out is likely to vary as a function of the member's standing (i.e. status) in the group, the need to belong, and fear of social exclusion.

Member status in the group refers to the perceived degree of inclusion into the group. Research on social psychology has differentiated between core (i.e. central) and peripheral (i.e. marginal) members in terms of their locus in the group fabric. Core members are fully integrated, more prototypical of the group, and evaluated more positively. Therefore, they have a significantly more influential role in the group. Peripheral members, in contrast, are less engaged in the group, less prototypical, and more likely to be influenced by core members (Ellemers & Jetten, 2013; Hogg, Cooper-Shaw, & Holzworth, 1993). Due to the facts that they are more likely to be the subject of influence from core members (Pickett, Gardner, & Knowles, 2004) and that they tend to expend more efforts than core members towards group inclusion (Ellemers & Jetten, 2013), peripheral group members may disproportionately experience higher degrees of

FOMO.

However, the positive association between peripheral group standing (henceforth perceived peripherality) and FOMO is likely to be contingent on whether or not those at the periphery aspire for group belongingness and fear exclusion from the group. The need to belong is defined as a pervasive desire to form and maintain interpersonal connections (Baumeister, 2011; Jansen, Otten, Van Der See, & Jans, 2014). It is a basic psychological need that shapes emotion, cognition, and behavior (Baumeister, 2011; Baumeister & Leary, 1995; DeWall, Deckman, Pond, & Bonser, 2011; Pickett, Gardner, & Knowles, 2004). Picket, Gardner, & Knowles (2004) liken the need for belongingness to physiological hunger stating, "similar to the perpetually hungry person who is constantly scanning her environment for food, an individual high in belonging needs should be chronically attuned to social cues" (p. 1096). Research indicates that high need for belongingness is associated with greater social surveillance and motivates individuals to navigate their environment for social opportunities (Gardner, Pickett, & Brewer, 2000; Pickett, Gardner, & Knowles, 2004). Participants who scored high in the need to belong outperformed others in attending to and accurately encoding social cues (Pickett, Gardner, & Knowles, 2004).

Research also indicates that threat of social exclusion influences attention, a pivotal building block in many complex cognitive processes (DeWall, Deckman, Pond, & Bonser, 2011). Compared to non-excluded participants, socially excluded participants were faster in recognizing smiling faces in a crowd and were more likely to fixate more on smiling faces (Fox, Russo, Bowles, & Dutton, 2001; Hansen & Hansen, 1988 as cited in DeWall et al., 2011). Fear of social exclusion also results in exerting considerably more efforts towards group inclusion (Maner, DeWall, Baumeister, & Schaller, 2007). Individuals who are anxious about social

exclusion are more likely to form attitudes and engage in behaviors that could earn them immediate social acceptance, even when such attitudes and behaviors go against what they normally consider desirable. (DeWall, Deckman, Pond, & Bonser, 2011).

Drawing on these streams of research, it is reasonable to propose that the need for group belongingness and fear of social exclusion will moderate the effect of perceived peripherality on FOMO. FOMO is likely to be experienced by peripheral individuals who are more concerned about belongingness and who fear social exclusion because of their heightened propensity to attend to positive social cues (i.e. others are having fun) as well as their increased motivation for affiliation. Peripheral members who are not worried about group belongingness or social exclusion are, in contrast, less likely to experience FOMO.

2.3. FOMO and Alcohol Consumption

There has been only one study that investigated the impact of FOMO on college drinking (Flett, Riordan, Scarf, & Conner, 2015). Flett et al. (2015) reported that FOMO was not significantly related to the amount of alcohol consumption, but it significantly and positively predicted the negative alcohol-related consequences. Although Flett et al.'s study offers a preliminary support, it leaves many unanswered questions about the precise mechanism leading from FOMO to alcohol-related outcomes. Additionally, FOMO was examined only as an independent variable and important predictors such as alcohol expectancies and peer norms were overlooked. In addition, a major limitation in Flett et al.'s study was the use of the general FOMO scale, which captures the general tendency to fear missing out on whatever peers are doing. A scale that attempts to capture the fear of missing out on alcohol consumption and particularly drinking parties (i.e. alcohol-related FOMO) might provide a more valid measure than the general FOMO scale.

2.4. Alcohol-Related FOMO

The current conceptualization of FOMO frames it as a peer-orientation disposition that is relatively stable, regardless of the target behavior or the extent to which that particular behavior is perceived to be fun. Thus, it may fall short in capturing the within-person variance of FOMO across different target behaviors. Tailoring the FOMO scale to be alcohol-consumption-behavior-based has the potential of explaining the variance in the "missed out fun" that is particularly associated with the drinking behavior, thus increasing validity. In light of the previously discussed approaches to FOMO, alcohol-related FOMO can be defined as the apprehension experienced when peers are perceived to be having more rewarding experiences as result of alcohol consumption. Items tapping alcohol-related FOMO will be developed to capture fear of missing out on parties, drinking games, alcohol-associated fun, and the regret anticipated from not drinking.

2.5. Alcohol-Related FOMO: Effects of FOMO, Social Identification, Self-relevance, Attitudes, & Social Image

Alcohol-related FOMO appears to result from four interrelated antecedent factors, namely college perceptions (i.e. college as a limited time offer for behavioral disinhibition and experimentation), social-identification, self-relevance, and attitudes towards alcohol consumption and social image of alcohol consumers. In addition, the general FOMO is likely to have a unique contribution in the prediction of alcohol-related FOMO.

Alcohol-Related FOMO and College Perceptions. Previous research has indicated that perceptions of college predict drinking behavior among college students. Perceived importance of college parties during adolescence was particularly associated with heavy drinking at college (Sher & Rutledge, 2007). The current study proposes that perceptions and expectations of

college as a fleeting time for behavioral disinhibition will also invoke alcohol-related FOMO. The underlying mechanism of college as 'a prime time for drinking and behavioral disinhibition that should be utilized to the fullest' appears to be similar to that of the limited-time scarcity and the '*don't be left behind*' messages, accentuated in the marketing research. Given the relatively less commitments and greater freedom, college years might be perceived as a fleeting offer for behavioral disinhibition and experimentation (e.g. excessive drinking) that should be seized. Not drinking when the opportunity arise during these years might become synonymous with missing out on this limited time offer and being alienated from a peer group. Therefore, perceptions that college is a fleeting offer for excessive drinking should feed into alcohol-related FOMO.

Alcohol-Related FOMO and Social Identification. Social identification reflects the tendency to associate the self with particular others or groups (Ellemers, van Nunspeet, & Scheepers, 2013; Duffy, Scott, Shaw, Tepper, & Aquino, 2012; Smith & Kim, 2007). As FOMO is triggered by, and is inherently a, social comparison, social identification should logically be a prerequisite factor. Smith and Kim (2007) stated that without such social identification "social comparison can seem irrelevant, and our reactions may be indifferent and detached" (p. 50). Researchers also indicated that social identification with particular others led to behavioral assimilation (Collins, 1996; Mussweiler, Rüter, & Epstude, 2004; Wheeler & Suls, 2007). When people socially identify with peers who engage in binge drinking, they might feel more inclined to engage in similar fun experiences, thus contributing to alcohol-related FOMO.

Alcohol-Related FOMO and Self-Relevance. Another contributing factor to alcohol-related FOMO is self-relevance, defined as the degree of concern with particular ideas, experiences, and products (Schueler, 2008). FOMO is more likely to occur when the attribute or behavior (e.g. binge drinking) are rated as important (Stapel & Koomen, 2001; Tesser, 1988).

Therefore, self-relevance of alcohol consumption appears to be another precondition for alcohol-related FOMO.

Alcohol-Related FOMO, Attitudes, and Social image. The role of attitudes in predicting drinking behavior has been validated theoretically and empirically (Borsari, Neal, Collins, & Carey, 2001; Burden & Maisto, 2000). Favorable social images of drinkers have also been associated with drinking behavior (see Gibbons, Gerrard, & Lane, 2003). Therefore, positive attitudes towards alcohol consumption and favorable perceptions of alcohol drinkers are likely to contribute to alcohol-related FOMO.

2.6. Alcohol-Related FOMO and Binge Drinking Intentions

A major objective of this dissertation seeks to disentangle the mechanism linking alcohol-related FOMO with binge drinking intentions. In addition to the expected direct effect, three different, yet relevant, pathways are proposed based on theoretical justifications from theories of health behavior (i.e. expectancy-value theory, social norms, and theory of planned behavior). Alcohol-related FOMO is predicted to contribute to binge drinking intentions through 1) mediating the effects of alcohol positive expectancies, 2) decreasing the effect of alcohol negative expectancies, and 3) moderating the influence of peer norms on binge drinking intentions.

2.6.1. Alcohol-related FOMO and Alcohol Expectancies

Alcohol expectancies are an inventory of the various effects associated with drinking (Jones, Corbin, & Fromme, 2001; Li & Dingle, 2012). They are a set of cognitive structures reflecting the perceived positive and negative consequences of alcohol consumption on emotions and behavior (Ibáñez et al., 2015; Labbe & Maisto, 2011; Leigh, 1989; Lee, Atkins, Cronce, Walter, & Leigh, 2015). Despite the conceptual overlap, expectancies and attitudes are different

in terms of their discriminant validity and differential prediction of alcohol use (see Stacy, Widaman, & Marlatt, 1990). The likelihood of alcohol expectancies has been theoretically and empirically established as the common pathway to drinking. The decision to consume a particular amount of alcohol is predominantly contingent on the presumption that the likelihood of positive expectancies outweigh the likelihood of negative expectancies (Burke & Stephens, 1999; Cox & Klinger, 1990).

Beside the variability in the perceived likelihood of the various positive and negative expectancies, individuals also vary in terms of their subjective evaluations (good vs. bad) of these effects (Fromme Stroot, & Kaplan, 1993). It is important to note that some researchers have multiplied the expectancies likelihood ratings with their respective subjective evaluations to create the expectancy index (e.g. Stacy, Widaman, & Marlatt, 1990). However, Fromme and colleagues (1993) argue against the multiplication practice because an expectancy score based on high likelihood and low favorability becomes equivalent to an expectancy score that is based on low likelihood and high desirability. Given that the two could operate and relate differently to drinking[1], the researchers recommend the disaggregation of the likelihood ratings and subjective evaluations (see Fromme at al., 1993).

Alcohol-related FOMO and Alcohol Positive Expectancies. The role of positive expectancies in relation to alcohol use and misuse is well established in the literature. Positive expectancies of social lubrication and physical, mental and mood enhancement are particularly linked with heavier drinking (Brown, Christiansen, & Goldman, 1987; Christiansen & Goldman, 1983; Fromme & D'Amico, 2000; Fromme, Stroot, & Kaplan, 1993; Hasking, Lyvers, & Carlopio, 2011; Ibáñez et al., 2015; Leeman, Toll, Taylor, & Volpicelli, 2009; Patrick, Cronce,

[1] Unlike the high likelihood/low desirability expectancy (e.g. headaches), which is unlikely to motivate drinking, the low likelihood/high desirability (e.g. sexual enhancement) expectancy could motivate drinking.

Fairlie, Atkins, Lee, 2016; Zamboanga, Schwartz, Ham, Borsari, & Van Tyne, 2010). Among college students, the expectancies that alcohol facilitates social interaction and enhances the social appeal significantly predicted heavy drinking (LaBrie, Lamb, & Pederson, 2009; Leeman, Toll, Taylor, & Volpicelli, 2009; McBride, Barrett, Moore, & Schonfeld, 2014). Leeman and colleagues (2009) found that the positive expectancy of social disinhibition reported during freshman year significantly predicted heavy drinking during senior year. Drawing on this line of research, positive expectancies are predicted to be positively associated with binge drinking intentions (see *P1* in *Figure 2.1*).

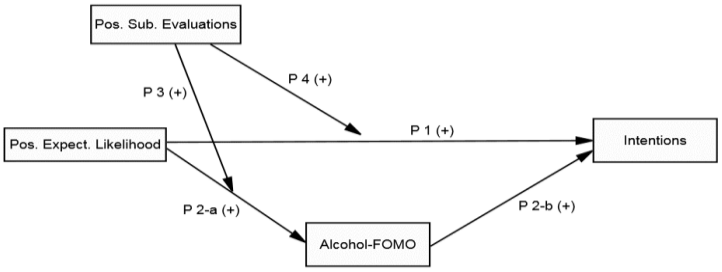

Figure 2.1. Proposed Model of Alcohol-Related FOMO, Positive Alcohol Expectancies, & Binge Drinking Intentions.

Further, alcohol-related FOMO is predicted to mediate the relationship between positive expectancies and binge drinking intentions, such that higher likelihood of positive expectancies should intensify feelings of alcohol-related FOMO, which in turn increases the intention to binge drink (see *P2-a & P2-b* in *Figure 2.1*). The reasoning for the role of alcohol-related FOMO in mediating the link between positive expectancies and binge drinking intentions can be partially justified by the expectancy-value theory and social cognitive theory, which both emphasize the impact of expectancies in influencing behavior. It seems logical that for positive expectancies to result in a specific behavior, they may first invoke fear of missing out on that particular behavior. Individuals who associate binge drinking with more positive expectancies should experience more alcohol-related FOMO and subsequently have greater intentions for binge drinking.

Numerous studies have confirmed that favorable evaluations of positive expectancies, used as an independent measure, augmented the relationship between positive expectancies and alcohol consumption (Fromme & D'Amico, 2000; Neighbors, Lewis, Bergstrom, & Larimer, 2006; Patrick, Cronce, Fairlie, Atkins, & Lee, 2016; Patrick & Maggs, 2011; Werner, Walker, & Greene, 1993). In line with these studies, favorable evaluations are predicted to enhance the positive link between positive expectancies and binge drinking intentions (see *P3* in *Figure 2.1*). In addition, more favorable evaluations of the positive expectancies are likely to moderate the positive expectancies – alcohol-related FOMO path (see *P4* in *Figure 2.1*). The reasoning can be based on the expectancy-value theory, which states that the more value attached to positive expectancies, the more attractive and appealing they seem. Higher subjective evaluations, a proxy for higher perceived appeal, is thus likely to strengthen the positive link between positive expectancies and alcohol-related FOMO.

Alcohol-related FOMO and Alcohol Negative Expectancies. On theoretical grounds, negative expectancies should be inversely associated with alcohol consumption, such that more negative expectancies should lead to less drinking. However, the role of negative expectancies is less clear and the empirical support has been mixed, with some studies validating the link (Fromme & D'Amico, 2000) while others disconfirming it (Neighbors, Lee, Lewis, Fossos, & Larimer, 2007; Patrick, Wray-Lake, Finlay, & Maggs, 2010), and others reporting that negative expectancies were associated with increased, rather than decreased, drinking (Hasking, Lyvers, & Carlopio, 2011; Read, Wardell, & Bachrach, 2013) The reasons behind the mixed support have been attributed to methodological as well as conceptual issues (see Jones, Corbin, & Fromme, 2001). Two explanations for such discrepancy in the findings are relevant to note here. First, it has been suggested that positive and negative expectancies relate differentially to the

various phases of alcohol consumption continuum, with positive expectancies predicting alcohol initiation and maintenance while negative expectancies predicting alcohol reduction and abstinence (Jones & McMahon, 1993; Lee, Greely, & Oei, 1999). Since the outcome measure in most college drinking studies has been, as is the case in this dissertation, the concurrent or future alcohol consumption, the larger predictive power of positive over negative expectancies becomes justifiable.

The second and more prevalent rationale has been based on the temporal proximity of expectancies. Positive expectancies such as sociability and the 'buzz' feeling are experienced immediately whereas negative expectancies such as hangovers and missed classes are more distal (Stacy, Widaman, & Marlatt, 1990). The temporal proximity influences how expectancies are encoded, stored, and activated (Fromme, Katz, & D'Amico, 1997). The relatively frequent and instantaneous reinforcement of positive expectancies strengthen their association with drinking, whereas the delay and infrequency of negative expectancies weaken their association with drinking. Therefore, typical drinking contexts such as parties and bars are likely to activate positive rather than negative expectancies (Wardell & Read, 2013). The temporal proximity of positive and negative expectancies is important to consider in the context of FOMO as the alcohol-related FOMO is expected to have stronger association with positive expectancies because they both entail immediacy of gratifications and they are likely to concurrently occur in drinking contexts.

Nevertheless, negative expectancies are expected to be closely related to alcohol-related FOMO and binge drinking intentions. Alcohol-related FOMO is likely to decrease the alcohol negative expectancies, which should result in greater intentions to binge drink. The reasoning for this is based on the contextualization of FOMO within the broader theoretical framework of self-

regulation (Baumeister, Heatherton, & Tice, 1994). FOMO appears to be a deficit in the self-regulatory system in that it is predominantly reward-driven and risk-aversive. As a deficit in self-regulation, FOMO is manifested in the previously mentioned consumer behaviors that show low sensitivity to potential risks (Saft, 2015). Moreover, using Loewenstein, O'Donoghue, and Bhatia's (2015) differentiation between affective and deliberative systems, FOMO appears to be a by-product of the affective system, which is geared towards more reflexive and short-term responses. Unlike the deliberative system, which is long-term and goal-oriented and evaluates risks based on their expected utilities, the affective system is insensitive to probabilities and is driven by loss aversion, thus its decisions are myopic and driven by short-term payoffs.

Operating under the affective system, alcohol-related FOMO is, therefore, expected to undermine the negative expectancies of alcohol consumption, especially in social settings where positive expectancies takes cognitive precedence over negative expectancies and decisions are typically made at the spur of the moment. Alcohol-related FOMO might be the reason why individuals choose to discount the negative expectancies, especially at the heat of the moment. Such discounting may operate through decreasing negative expectancies perceived likelihood (i.e. not likely to occur) as well as their subjective evaluation (i.e. not as severe as it could be). Therefore, individuals with high alcohol-related FOMO are predicted to rate negative expectancies as less likely to occur (see *P5-a* in *Figure 2.2*) and evaluate them as less severe (see *P6-a* in *Figure 2.2*), resulting in greater intentions to drink (*P5-b* & *P6-b*).

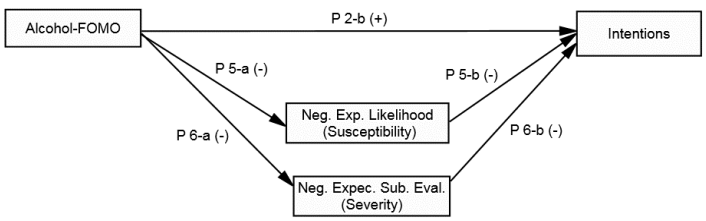

Figure 2.2. Proposed Model of Alcohol-Related FOMO, Negative Alcohol Expectancies, & Binge Drinking Intentions.

2.6.2. FOMO and Peer Norms

Social norms are the implicit and explicit rules that guide and regulate behavior in particular contexts (Hechter & Opp, 2001). Peer norms, which refer to the degree of acceptability and typicality of various drinking behaviors among peers, are strongly associated with the drinking behavior (Baer, 2002; Jacob & Leonard, 1994; Neighbors et al., 2010; Perkins & Wechsler, 1996; Scott-Sheldon, Carey, Elliot, Garey, & Carey, 2014). Research on norms differentiate between descriptive and injunctive norms. Descriptive norms refer to the perceived prevalence, quantity, and frequency of drinking among peers. Injunctive norms refer to the perceived approval of drinking and gauge the degree of acceptability of the behavior among peers and family (Cialdini, Reno, & Kallgren, 1990).

The overwhelming research on peer norms in relation to college drinking indicates that students overestimate the prevalence and approval of drinking behavior and that such overestimation is robustly associated with excessive drinking (Baer, 2002; Borsari & Carey, 2003; Perkins & Berkowitz, 1986; Perkins, Haines and Rice, 2005; Perkins & Wechsler, 1996; Rimal, 2008). In line with the current literature, both descriptive and injunctive norms are predicted to be positively associated with drinking intentions (see *P7* & *P8* in *Figure 2.3*)

Alcohol-related FOMO is predicted to result in greater susceptibility to peer norms. The reasoning for this proposition brings into perspective the definition of FOMO in relation to social comparison. The definition of FOMO as an apprehension that others are having more rewarding experiences implies an underlying upward social comparison (i.e. comparison with others deemed superior on a particular dimension) with similar others. Upward social comparison has been particularly associated with the motivation and tendency to engage in similar experiences (i.e. assimilation) (Collins, 1996; Wheeler & Suls, 2007). Furthermore, functioning under the

affective system (Loewenstein et al., 2015), FOMO is likely to result in low resistance to temptations. Therefore, it follows that in the context of alcohol consumption, fear of missing out on college drinking should strengthen the assimilation effect resulting from peer comparison and decrease resistance to peer temptations. Building on this reasoning, alcohol-related FOMO is expected to moderate the relationship between peer descriptive and injunctive norms on one hand and binge drinking intentions on the other, such that the positive association between norms and intentions will be stronger as alcohol-related FOMO increases (*P9* & *P10* in *Figure 2.3*).

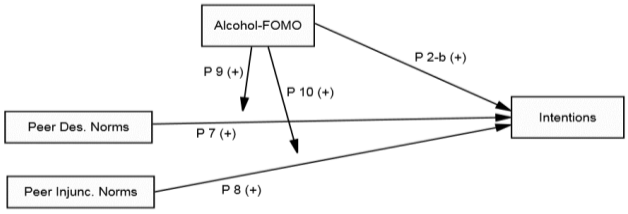

Figure 2.3. Proposed Model of Alcohol-Related FOMO, Peer Norms, & Binge Drinking Intentions.

Although the bulk of the literature on social norms discusses both descriptive and injunctive norms as equal predictors of behavior, an emerging line of research has addressed the differential impact of the two normative influences. There is growing evidence suggesting that the two types of social norms differ in terms of their cognitive and psychological underpinnings (see Jacobson, Mortensen, & Cialdini, 2011; Meisel, Colder, & Hawk, 2015). All things being equal, alcohol-related FOMO is likely to increase as the degree of social proximity, hence identification, increases. Therefore, the moderating effect of alcohol-related FOMO might be relatively larger for injunctive norms, compared to descriptive norms. Combining the previous models together yields the following model (*Figure 2.4*).

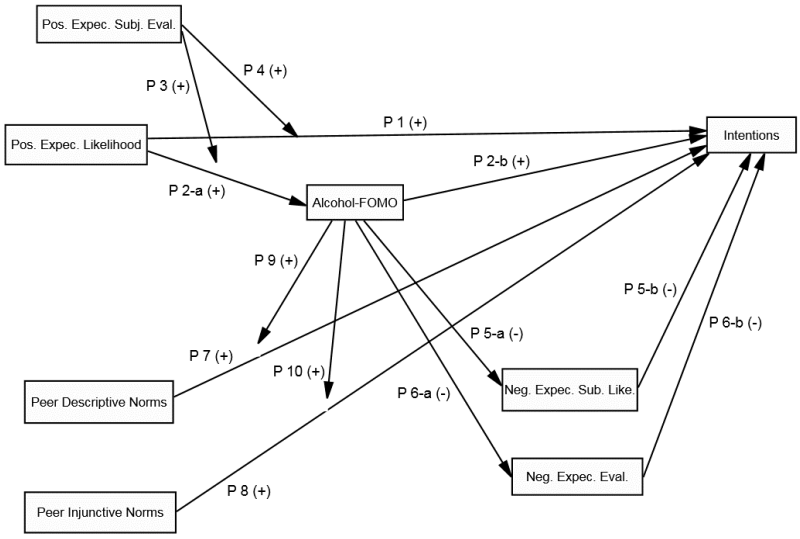

Figure 2.4. Proposed Model of Alcohol-Related FOMO, Alcohol Expectancies, Peer Norms, & Binge Drinking Intentions.

Chapter 3

Method

3.1 Research Design

The current study employed a non-experimental one-shot survey design.

3.2 Participants and Procedure

This study sampled from a college student population at the University of Connecticut. Colleges students were chosen as the study population because of their appropriateness to the topic of this dissertation and their accessibility and availability to the researcher. The study questionnaire was posted on Qualtrics and university students were invited to participate in the study via online announcements. Those who agreed to participate were required to provide consent in accordance with the UConn's IRB rules and regulations. Upon consent, they were directed to the online questionnaire. Participants completing the survey entered a drawing for six gift cards valued at $50, one gift card valued at $100, and one gift card valued at $200.

Five hundred and ninety college students responded to the survey. The data were screened for severely incomplete cases that were subsequently removed, leaving a total sample of 490 participants, with a mean age of 20.56 (*SD* = 1.44). Over 65% of the participants were females and white. See Table 3.2.1 for the sample demographics.

Table 3.2.1
Sample Demographics

Characteristic		**n**	**%**
Gender	Male	165	33.7
	Female	325	66.3
Age	17	12	3.3
	18	53	14.4
	19	73	19.8
	20	92	24.9
	21	72	19.5
	22	29	7.9
	≥23	38	10.2
Ethnicity	White	243	65.9
	African American	23	6.2

	Asian	68	18.4
	Other	35	9.5
School Year	Freshman	92	25
	Sophomore	76	20.7
	Junior	111	30.2
	Senior	71	19.3
	Graduate/Other	18	4.9
Fraternity/sorority Members	Yes	117	31.7
	No	252	68.3
Age when they had their first drink (i.e. early onset of alcohol use)	Never had a drink	80	16.4
	Under 10	9	1.8
	10-11	5	1.0
	12-13	29	5.9
	14-15	90	18.4
	16-17	143	29.2
	18-21	132	26.9
Family history of alcoholism	Yes	78	17.55
	No	254	82.45

3.3. Measures

FOMO. Fear of Missing Out was measured using the 10-item FOMO scale (Przybylski et al., 2013). One additional item (i.e. item 11) was added to the scale. Participants rated the extent to which the eleven statements were true of them, with responses ranging from 1 (*not at all true of me*) to 7 (*extremely true of me*). The total score was calculated by taking the average of the eleven items (M = 3.51, SD = 1.25). The FOMO scale had high internal consistency (Cronbach's alpha = *.88*) and demonstrated a good CFA model fit, MLM$\chi^2(37) = 102.595$, $p < .001$, RMSEA = .063 (90% CI = .048, .077; $p = .071$), CFI = .971, TLI = .957, SRMR =.042. See Table 3.3.1 for the scale items and their means, standard deviations, and standardized factor loadings.

Table 3.3.1
Descriptive Statistics of the FOMO Scale

Item	Mean (*SD*)	Factor Loading
1. I worry that others have more rewarding experiences than me.	3.32 (*1.93*)	.572
2. It makes me anxious when my friends have more rewarding experiences than me.	3.27 (*1.94*)	.675
3. I get jealous when I find out my friends are having fun without me.	3.97 (*1.94*)	.864
4. I get anxious when I don't know what my friends are up to.	2.80 (*1.76*)	.745
5. It is important that I understand my friends "in jokes."	3.88 (*1.74*)	.680
6. Sometimes, I wonder if I spend too much time keeping up with what is going on with my friends.	2.62 (*1.56*)	.689
7. It bothers me when I miss an opportunity to meet up with friends.	4.18 (*1.81*)	.621

8. When I have a good time it is important for me to share the details online (e.g. updating status).	2.41 (*1.61*)	.476
9. It bothers me when I miss out on a planned get-together.	4.78 (*1.72*)	.595
10. When I am away from school, I continue to keep tabs on what my friends are doing.	3.93 (*1.73*)	.562
11. I get upset when I find out that my friends had been hanging out without me.	3.90 (*1.84*)	.676

Past drink(ing). Past heavy drinking, added as a control variable in the models, was assessed using the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985). Participants were asked to estimate the number of drinks consumed daily during what they considered to be their heaviest week of drinking over the past 30 days. *Past drinking* was calculated by taking the average score of the total number of drinks consumed during each day (i.e. drinks consumed on *Saturday*, *Sunday*, *Monday*, *Tuesday*, *Wednesday*, *Thursday*, and *Friday*) of the heaviest drinking week. The Cronbach's alpha for the scale was *a = .90*.

Early onset of alcohol use. Early onset of alcohol use was assessed using an item taken from Zhang, Bray, Zhang, & Lanza (2015). Participants were asked to indicate their age when they first had alcohol without the presence of their parents or adult members of their family. Responses ranged from 0 = *never* and 1= *under 10* to 8 = *26 or older*. Just over 24% of the sample reported having their first drink before the age of 15. 29% of the sample had their first drink when they were 16-17 and 27% had it when they were 18-21 (see Table 3.3.1).

Frequency of binge drinking. On a scale ranging from 1=*never* to 6=*10 or more times*, participants were asked to indicate the frequency of their binge drinking during the preceding four weeks. The average frequency of binge drinking was $M = 2.18$ ($SD = 1.42$). Just over 16% of the participants reported that they never had a drink. About 30% of the male and female participants engaged in binge drinking once or twice and 3% reported binge drinking ten times or more in the preceding month (see Table 3.3.2).

Table 3.3.2
Frequency of Binge Drinking as Reported for Last Month by Gender

	Male		Female	
	n	%	n	%
Never	86	52.1	152	46.9
Once	27	16.4	53	16.4
Twice	21	12.7	44	13.6
3-5 Times	21	12.7	49	15.1
6-9 Times	5	3.0	18	5.6
≥ 10 Times	5	3.0	8	2.5
Total	165	100	325	100

Frequency of preloading. On a scale ranging from 1=*never* to 7=*Every time*, participants were asked to indicate the frequency of preloading (i.e. consuming alcohol at a domestic residence prior to attending a party) behavior during the preceding four weeks. See Table 3.3.3 for the preloading frequencies across gender.

Table 3.3.3
Frequency of Preloading as Reported for Last Month by Gender

	Male		Female	
	n	%	n	%
Never	107	64	163	50
Rarely	19	11.5	57	17.5
Occasionally	11	6.7	31	9.5
Sometimes	8	4.8	24	7.4
Frequently	9	5.5	19	5.8
Usually	9	5.5	18	5.5
Every time	2	1.2	12	3.7
Total	165	100	325	100

Alcohol-related problems. A brief version of the Rutgers Alcohol Problem Index (RAPI; White and Labouvie, 1989), developed by Earleywine et al. (2008), was used to assess alcohol-related problems. Participants were asked to indicate the number of times, from 0 = *never* to 4 = *10 times or more*, they encountered eighteen alcohol-related problems while they were drinking or because they were drinking last year (see Table 3.3.4 for the items). Scores were calculated by averaging the total number responses for each participant. The average score for alcohol-related problems was $M = 1.23$ ($SD = .412$). The brief RAPI demonstrated a high internal consistency ($a = .93$), but had a skewness of 3.34 and kurtosis of 14.04. Therefore, the scale was transformed

using the log-likelihood to meet the normality assumption.

Table 3.3.4
Alcohol-Related Problems Scale Items & Statistics

Item	Mean (*SD*)
1. Not able to do your homework or study for a test.	1.36 (*.711*)
2. Got into fights with other people (friends, relatives, strangers).	1.31 (*.657*)
3. Missed out on other things because you spent too much money on alcohol.	1.15 (*.490*)
4. Went to work or school high or drunk.	1.23 (*.629*)
5. Caused shame or embarrassment to someone.	1.26 (*.635*)
6. Drove a car while under the influence.	1.16 (*.524*)
7. Friends or relatives avoided you.	1.10 (*.450*)
8. Felt that you needed more alcohol than you used to in order to get the same effect.	1.34 (*.800*)
9. Tried to control your drinking (e.g. tried to drink only at certain times of the day).	1.07 (*.371*)
10. Had withdrawal symptoms (i.e. felt sick because you stopped or cut down on drinking).	1.54 (*.832*)
11. Done something you later regretted.	1.15 (*.549*)
12. Felt that you had a problem with alcohol.	1.25 (*.728*)
13. Missed a day (or part of a day) of school or work.	1.31 (*.655*)
14. Suddenly found yourself in a place that you could not remember getting to.	1.26 (*.633*)
15. Passed out or fainted suddenly.	1.09 (*.430*)
16. Kept drinking when you promised yourself not to.	1.22 (*.565*)
17. Felt physically or psychologically dependent on alcohol.	1.10 (*.473*)
18. Was told by a friend, neighbor or relative to stop or cut down drinking.	1.16 (*.552*)

Binge drinking intentions were assessed through willingness and likelihood. *Willingness* was measured using three items. Participants were first asked to indicate the number of drinks they were willing to have if the opportunity came up in the future. Responses to this item ranged from 1 = *0 drinks* to 25 *=24 drinks or more*. Participants were also asked to indicate the degree of their willingness to binge drink (i.e. consume 4 or more standard drinks in one setting for females and 5 or more standard drinks in one setting for males) if 1) the opportunity came up at some point in the future and it seemed like it would be ok to binge drink, and 2) it would help the participant to go with the flow at a party with friends. Responses to these two items ranged from 1 = *strongly disagree* to 7 = *strongly agree*. *Likelihood* was measured using three items that asked participants to indicate the likelihood of 1) drinking alcohol, 2) binge drinking at least once, and 3) binge drinking more than once in the next 30 days, on a scale ranging from 1

(*extremely unlikely*) to 7 (*extremely likely*). Both willingness and likelihood were calculated by taking the average score of the respective three items. The sample had an average willingness of $M = 3.92$ ($SD = 2.17$) and likelihood of $M = 3.52$ ($SD = 2.19$) for binge drinking in the next 30 days. Both willingness and likelihood had good reliabilities of $a = .86$ and $a = .93$, respectively.

Drinking Motives. A modified version of the *multi-dimensional drinking motives scale* (Cooper, 1994) was used to assess participants' alcohol consumption motives. The scale consisted of 16 items that tapped the social, coping, and conformity motives for alcohol consumption (see Table 3.3.5 for the scale items and statistics). Responses to the items ranged from 1 = *never* to 5 = *every time*. Scores were calculated by taking the average score of the corresponding scales. The alpha reliability of drinking motives was $a = .95$ and the alpha reliabilities of the subscales were .95, .89, and .89 for sociability, coping and conformity motives, respectively.

Table 3.3.5
Drinking Motives Items & Statistics

Motives	You often drink:	M (*SD*)	
Social Motives	1. Because it helps you enjoy a party.	2.58 (*1.28*)	2.75 (*1.18*)
	2. To be sociable.	2.76 (*1.33*)	
	3. Because it's exciting.	2.37 (*1.29*)	
	4. Because you feel more self-confident and sure of yourself.	2.18 (*1.24*)	
Coping Motives	5. To forget your worries.	1.69. (*.94*)	1.79 (.83)
	6. Because it helps you when you feel depressed or nervous.	1.60 (*.95*)	
	7. To cheer up when you are in a bad mood.	1.75 (*.98*)	
	8. Because it gives you a pleasant feeling.	2.68 (*1.34*)	
	9. To forget about your problems.	1.59 (*.90*)	
Conformity Motives	10. Because your friends pressure you to drink.	1.67 (*.90*)	1.61 (.76)
	11. So others won't kid you about not drinking.	1.39 (*.75*)	
	12. Because it makes a social gathering more fun.	2.79 (*1.32*)	
	13. So you won't feel left out.	1.69 (*1.02*)	
	14. To be liked.	1.51 (*.86*)	
	15. To fit in with a group you like.	1.80 (*1.05*)	

Alcohol-related FOMO. A preliminary set of 34 original items, with responses ranging

from 1 = *not true of me* to 7 = *extremely true of me*, derived from the general *FOMO* scale but geared towards drinking and partying, were used to measure *alcohol-related FOMO*. A list of the items along with their descriptive statistics are presented in Table 3.3.6. See Chapter 4 for detailed exploratory and confirmatory analyses of the scale.

Table 3.3.6
Alcohol-Related FOMO Items & Statistics

Item	M (*SD*)
1. It bothers me when I miss an opportunity to drink alcohol with friends.	2.63 (*1.78*)
2. It disturbs me when I miss a drinking party with friends.	2.44 (*1.73*)
3. I feel that I miss out when I don't drink given the opportunity.	2.21 (*1.60*)
4. I regret it when I miss a drinking party or gathering with friends.	2.73 (*1.86*)
5. I get jealous when my friends are having fun drinking without me.	2.71 (*1.86*)
6. I worry that others are having more rewarding experiences as a result of drinking.	2.21 (*1.54*)
7. I drink because I worry about being left out.	1.86 (*1.34*)
8. I drink at parties because I worry about missing out on the fun.	2.04 (*1.52*)
9. It is important to participate in the drinking games my peers are having.	2.32 (*1.62*)
10. I get the urge to participate whenever my friends play drinking games.	2.76 (*1.93*)
11. I feel like missing out when not joining my friends in the drinking games.	2.40 (*1.71*)
12. I get upset when I am not allowed into a drinking party.	2.28 (*1.73*)
13. I get disappointed when parties turn out to be alcohol-free.	2.08 (*1.59*)
14. I need alcohol to have fun at parties.	1.83 (*1.34*)
15. I drink because I don't want to miss out on the college experience.	2.29 (*1.72*)
16. Ten years from now, I am going to regret not going out and having "crazy" drinking nights with my friends.	2.79 (*1.80*)
17. Ten years from now, I am going to regret not letting loose with alcohol.	2.45 (*1.65*)
18. I party at college now so I will not feel like I missed out on these carefree moments in ten years from now.	2.81 (*1.96*)
19. In ten years from now, I will regret NOT partying more.	2.96 (*1.82*)
20. When I have a good time partying, it is important to share it online (e.g. updating status).	2.09 (*1.52*)
21. I should seize every opportunity to drink at college.	2.08 (*1.41*)
22. My greatest college memories will involve the drinking parties and games.	2.22 (*1.58*)
23. Alcohol use reduces my enjoyment at parties (*Reverse coded*).	5.29 (*1.59*)
24. I think alcohol availability makes parties more fun.	3.51 (*1.99*)
25. I sometimes feel like missing out on the fun of being "drunk"	2.71 (*1.68*)
26. I sometimes feel like missing out on fun of "alcohol buzz"	2.86 (*1.71*)
27. I go to parties and gatherings for the social fun of it.	5.06 (*1.83*)
28. I go to parties and gatherings for the fun of drinking	2.93 (*1.78*)
29. I sometimes feel like missing out on the euphoria of alcohol	2.96 (*1.76*)
30. I choose friends who have the same attitudes towards alcohol consumption (i.e. drinking) as me.	4.12 (*1.85*)
31. I change my circle of friends so that their attitudes towards drinking match mine	2.62 (*1.62*)
32. I change my circle of friends so that their drinking behaviors match mine.	2.60 (*1.64*)

33. I sometimes feel like missing out on the drinking adventures and joys my friends have	3.05 (*1.85*)
34. I believe people can have as much fun without alcohol (*Reverse coded*).	2.56 (*1.78*)

College perceptions. Participants were asked to indicate their endorsement of three items reflecting the perception of college as a prime time for drinking that should be utilized to the fullest. The items were: 1) college years are the prime time for drinking, 2) college is a fun experience that should be enjoyed to the fullest, and 3) college is the time to let loose and have good times. Responses to the three items ranged from 1 = *strongly disagree* to 7 = *strongly agree*. College perceptions, calculated by taking the average score of the three items, had an alpha reliability of a = .71 and an average score of M = 4.90 (SD = 1.39).

***Social identification*.** To measure the extent to which they identify with fellow alcohol drinkers, participants were asked to indicate the extent to which they agreed with four items taken from Cameron's (2004). Responses ranged from 1= *strongly disagree* to 7 = *strongly agree*. The items were: 1) I have a lot in common with peers who consume alcohol, 2) I feel strong ties to peers who consume alcohol, 3) I find it difficult to form a bond with peers who consume alcohol, and 4) I don't feel a strong sense of being connected to peers who consume alcohol. The last two items were reverse coded and an average score of the responses to the four items was used to calculate social identification, M = 2.73 (SD = 1.52). Social identification had an acceptable alpha reliability (a = .71).

Self-relevance. Self-relevance was measured through an adapted version of Zaichkowsky's Personal Involvement (1985) scale (see Houston & Walker, 1996). Participants were asked to rate the self-relevancy of alcohol consumption using a 7-point-bipolar items (i.e. important – unimportant, means a lot – means nothing, of no concern – of concern, irrelevant – relevant, doesn't matter – matters a lot, insignificant – significant, unappealing-appealing).

Scores were calculated by taking the average of the seven items, $M = 2.73$ ($SD = 1.52$). Self-relevance had a good alpha reliability ($a = .96$).

Attitudes. Six items were used to measure positive attitudes towards alcohol consumption. Two of these items asked participants to indicate their attitudes towards alcohol consumption next month, on scales ranging from 1 = *extremely negative/unfavorable* to 7 = *extremely positive/favorable*. Four additional items were added to reflect attitudes towards being buzzed (i.e. I like being buzzed & being buzzed is good) and being drunk (i.e. I like being drunk & being drunk is good). Responses to the last four items ranged from 1 = *strongly disagree* to 7 = *strongly agree*. Attitudes, calculated by taking the average score of the six items, had a reliability of $a = .94$ and a mean of $M = 3.84$ ($SD = 1.67$).

***Social Image*.** Two items were used to measure social image – the extent to which participants think that people who drink alcohol are "*cool*" and "*appealing*," with responses ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The correlation between these two items was $r = .69$, $p < .001$. Social image was calculated by taking the average score of the two items, $M = 2.84$, $SD = 1.43$.

***Perceived Peripherality*.** A subset of the perceived group inclusion scale (Jansen, Otten, Van Der See, & Jans, 2014; Jensen, Otten, van der Zee, 2015) was used to operationalize the central versus peripheral member standing in the group. Such operationalization was adopted due to the lack of measures that reflect member standing in the group as researchers in social psychology have so far been manipulating group status (see Ellemers & Jetten, 2013; Hogg, Cooper-Shaw, & Holzworth, 1993). Perceived group inclusion was the closest to what the researcher needed for empirical measurement. Participants were asked to think about the group they hang out with the most and indicate the extent of their agreement to eight items tapping

their perceived membership to that particular group and the affection they received from it, with responses ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The items were: The group I hang out with the most: 1) gives me the feeling that I belong, 2) gives me the feeling that I am part of the group, 3) gives me the feeling that I fit in, 4) treats me as an insider, 5) likes me, 6) appreciates me, 7) is pleased with me, and 8) appreciates me. The eight membership items were reverse coded, so higher scores indicate higher group marginality (henceforth perceived peripherality or perceived periphery). Recoding was deemed necessary for easier interpretation of the results, in general, and moderation effects, in particular. Responses to the eight items were then averaged to calculate perceived peripherality, M = 2.22 (SD = 1.09). The reliability of perceived peripherality was high (a = .97).

***Need to belong*.** The need to belong was assessed using a ten-item scale taken from Leary, Kelly, Cottrell, & Schreindorfer (2013). On the scale that ranged from 1 = *not true of me* to 7 = *very true of me*, participants were asked to indicate the extent to which each statement was characteristic of them (see Table 3.3.7 for the items and statistics). Three items were reverse coded. The need to belong was calculated by taking the average score of the ten items, M = 4.35 (SD = 1.03). It had an acceptable reliability of a =.82.

Table 3.3.7
The Need to Belong Scale Items & Statistics

Item	Mean (*SD*)
1. If other people in my group don't seem to accept me, I don't let it bother me (*Reverse coded*).	1.36 (*.711*)
2. I try hard not to do things that will make other people in my group avoid or reject me.	1.31 (*.657*)
3. If other people in my group don't seem to accept me, I don't let it bother me (*Reverse coded*).	1.15 (*.490*)
4. I need to feel that there are people in my group I can turn to in times of need.	1.23 (*.629*)
5. I want other people in my group to accept me.	1.26 (*.635*)
6. I do not like being alone.	1.16 (*.524*)
7. Being apart from my friends for long periods of time does not bother me (*Reverse coded*).	1.10 (*.450*)
8. I have a strong "need to belong."	1.34 (*.800*)
9. It bothers me a great deal when I am not included in my group's plans.	1.07 (*.371*)
10. My feelings are easily hurt when I feel that others in my group do not accept me.	1.54 (*.832*)

Fear of social exclusion. Three items were used to measure fear of social exclusion: 1) I fear being excluded from the group I hang out with the most, 2) I worry when I feel left out from the group I hang out with the most, and 3) I aspire for more group inclusion in the group I hang out with the most. Responses for these items ranged from 1 = *not true of me* to 7 = *very true of me*. Fear of social exclusion was calculated by taking the average of the responses to the three items (M = 3.72, SD = 1.81). The reliability for the fear of social exclusion scale was a = .90.

Alcohol Expectancies. Alcohol expectancies were measured through a modified version of the Comprehensive Effects of Alcohol (CEOA) questionnaire (Fromme et al., 1993). The scale assesses both the *likelihood* and *evaluations* of *positive* and *negative* alcohol expectancies by asking participants to 1) estimate how *likely* they would experience the positive or negative effect (i.e. expectancy) if they were under the influence of alcohol, and 2) rate the evaluation or favorability of the effect. The *likelihood* of *positive* and *negative* expectancies was assessed on a 7-point scale, ranging from 1= *strongly disagree* to 7 = *strongly agree*. The *evaluations* of *positive* and *negative* expectancies were assessed on a 7-point scale, ranging from 1 = *very bad* to 7 = *very good*. To ease interpretation, the negative expectancies evaluations were recoded so that higher scores reflect the severity of negative expectancies. *Negative expectancies evaluations* and *negative expectancies severity* are used interchangeably in the remainder of this dissertation. The *positive expectancies* are further grouped into *sociability*, *sexuality*, *courage*, and *tension reduction*. The *negative expectancies* are grouped into *impairment*, *aggression*, and *self-perception* expectancies. Both the general positive expectancies likelihood and negative expectancies likelihood had a reliability of a =.87. The alpha reliabilities of the general *positive expectancies evaluation* and *negative expectancies evaluation* were a =.92 and a =.87,

respectively. See Table 3.3.8 for the alcohol expectancies scale and subscale items, reliabilities and statistics. The labels between the brackets are corresponding to the labels used in the results section.

Table 3.3.8
Alcohol Expectancies Scale and Subscale Items & Statistics

	Likelihood		Evaluation	
	a	M (*SD*)	*a*	M (*SD*)
General Positive Expectancies	.87	4.53 (*1.08*)	.92	4.47 (*1.03*)
1. I would be talkative (L34, E34).				
2. It would be easier to talk to people (L31, E31).				
3. I would be friendly (L14, E14).				
4. I would act sociable (L38, E38).				
5. I would be outgoing (L1, E1).				
6. I would feel calm (L29, E29).				
7. I would be feel peaceful (L18, E18).				
8. My body would be relaxed (L27, E27).				
9. I would be brave and daring (L19, E19).				
10. I would feel unafraid (L20, E20).				
11. I would be courageous (L22, E22).				
12. I would enjoy sex more (L12, E12).				
13. I would be a better lover (L32, E32).				
14. I would feel sexy (L7, E7).				
Sociability Expectancies	.91	5.17 *(1.40)*	.90	4.80 (*1.20*)
1. I would be talkative (L34, E34).				
2. It would be easier to talk to people (L31, E31).				
3. I would be friendly (L14, E14).				
4. I would act sociable (L38, E38).				
5. I would be outgoing (L1, E1).				
Sexuality Expectancies	.74	3.84 *(1.37)*	.74	4.17 (*1.14*)
1. I would enjoy sex more (L12, E12).				
2. I would be a better lover (L32, E32).				
3. I would feel sexy (L7, E7).				
Courage Expectancies	.88	4.37 (*1.37*)	.85	4.16 (*1.05*)
1. I would be brave and daring (L19 E19).				
2. I would feel unafraid (L20, E20).				
3. I would be courageous (L22, E22).				
Tension Reduction Expectancies	.69	4.38 (*1.20*)	.83	4.53 (*1.21*)
1. I would feel calm (L29, E29).				
2. I would be feel peaceful (L18, E18).				
3. My body would be relaxed (L27, E27).				
General Negative Expectancies	.87	4.73 (*1.21*)	.87	5.14 (*.928*)
1. I would be clumsy (L15, E15R).				
2. My head would feel fuzzy (L11, E11R).				
3. I would feel dizzy (L13, E13R).				

4. My responses would be slow (L26, E26R).				
5. I would have difficulty thinking (L8, E8R).				
6. My writing would be impaired (L6, E6R).				
7. My senses would be dulled (L2, E2R).				
8. I would neglect my obligations (L9, E9R).				
Impairment Expectancies	.85	4.76 (*1.23*)	.85	5.10 (*.971*)
1. I would have difficulty thinking (L8, E8R).				
2. I would feel dizzy (L13, E13R).				
3. My head would feel fuzzy (L11, E11R).				
4. My responses would be slow (L26, E26R).				
5. My writing would be impaired (L6, E6R).				
Aggression Expectancies	.75	3.38 (*1.37*)	.77	4.38, (*1.25*)
1. I would act tough (L35, E35R).				
2. I would take risks (L36, E36R).				
3. I would act aggressively (L25, E25R).				
Self-Perception Expectancies	.67	3.53 (*1.32*)	.76	4.78 (*1.12*)
1. I would feel moody (L30, E30R).				
2. I would feel guilty (L28, E28R).				
3. I would feel self-critical (L33, E33R).				

Confirmatory factor analyses (CFA) were conducted to verify the factorial structure of the general positive and negative expectancies. Since missing data analysis showed that the largest percentage of missingness was reported for alcohol expectancies, reaching a maximum of 33%, there had been a concern that such missingness might have biased the results[2]. Therefore, data imputation was conducted and the alcohol expectancies CFA was re-run using an imputed dataset in Mplus[3].

A two-factor CFA of alcohol positive expectancies, where the fourteen items were modeled as first-order indicators of the likelihood and evaluation latent factors, resulted in a very good model fit in the non-imputed dataset, MLM$\chi^2(315) = 480.615$, $p < .001$, SCF = 1.3239, RMSEA = .041 (90% CI = .033, .048, p =.982), CFI = .958, TLI = .949, SRMR =.066. A

[2] A detailed discussion of missing data is presented in Chapter 4.

[3] Mplus employs a Markov Chain Monte Carlo (MCMC) simulation to generate multiple imputations of missing data; each imputation is based on an independent draw from the missing data posterior (see Asparouhov & Muthén, 2010). After creating the requested number (i.e. 50 imputations in this paper) of imputations, Mplus averages parameter estimates from each imputation and computes standard errors, taking into account the within- and between-imputation variance. The result is an imputed dataset that captures the variance and uncertainty of missing data generated by multiple imputations, and which can be used for further statistical analysis.

depiction of this model is shown in *Figure 3.3.1*. The CFA based on the imputed dataset resulted in a similarly satisfactory fit, MLM χ^2 (315) = 598.655, RMSEA = .048, CFI =.947, TLI= .937, SRMR = .062, with similar factor loadings (see *Figure 3.3.2*). Therefore, the non-imputed data will be used in subsequent analyses. As can be seen in both the imputed and non-imputed models, the sociability items (i.e. the first five indicators in the CFA model) have the highest factor loadings.

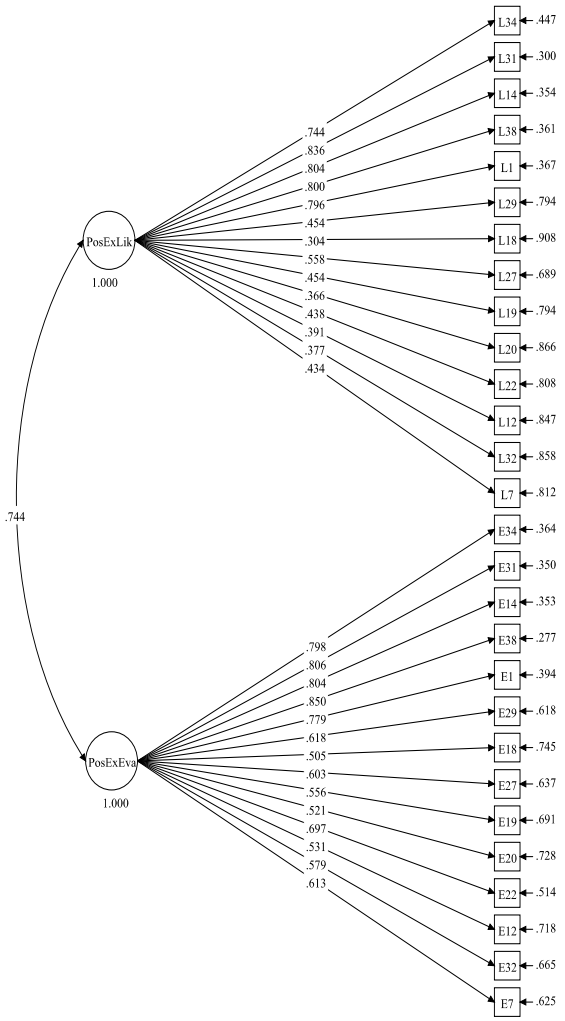

Figure 3.3.1. A CFA of Alcohol Positive Expectancy Scale on a Non-Imputed Data.

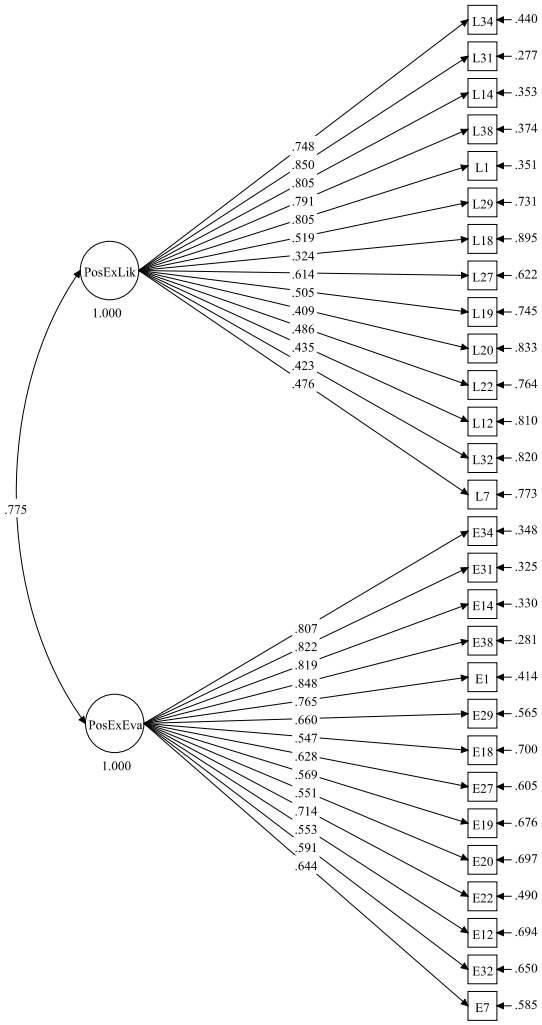

Figure 3.3.2. CFA of Alcohol Positive Expectancy Scale on Imputed Data.

The two-factor CFA of the eight negative expectancies items resulted in a very good model fit in the non-imputed dataset, MLM$\chi^2(94) = 123.529$, $p < .001$, SCF = 1.2189, RMSEA = .031 (90% CI = .012, .045, p =.991), CFI = .983, TLI = .979, SRMR =.045. A depiction of this model is shown in *Figure 3.3.3*. Re-running the same CFA negative expectancy model on imputed data resulted in a relatively bad fit, in terms of the CFI and TLI values, MLM$\chi^2(102)$ = 162.957, RMSEA = .049, CFI = .898, TLI = .880, SRMR =.061 (see *Figure 3.3.4).* The increase of degrees of freedom is due to the eliminating the non-significant residual covariances. Hypotheses testing of negative expectancies will, therefore, be conducted on both imputed and non-imputed data

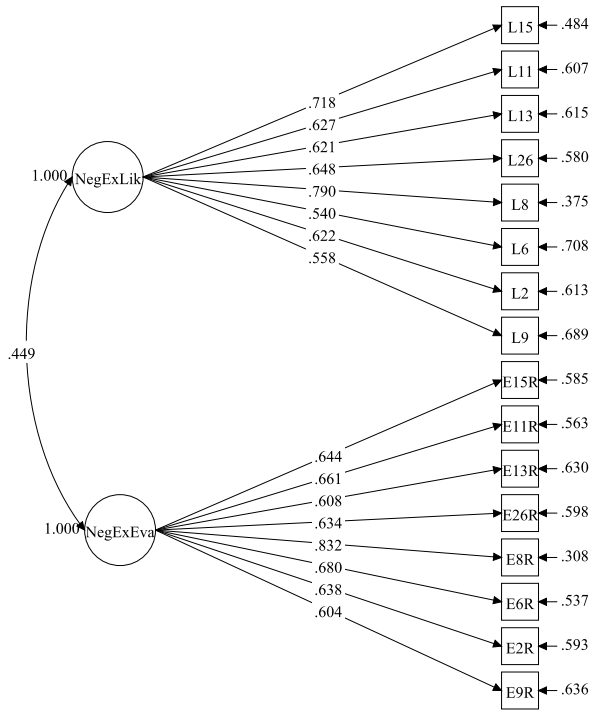

Figure 3.3.3. A CFA of The Negative Expectancies on Non-Imputed Data.

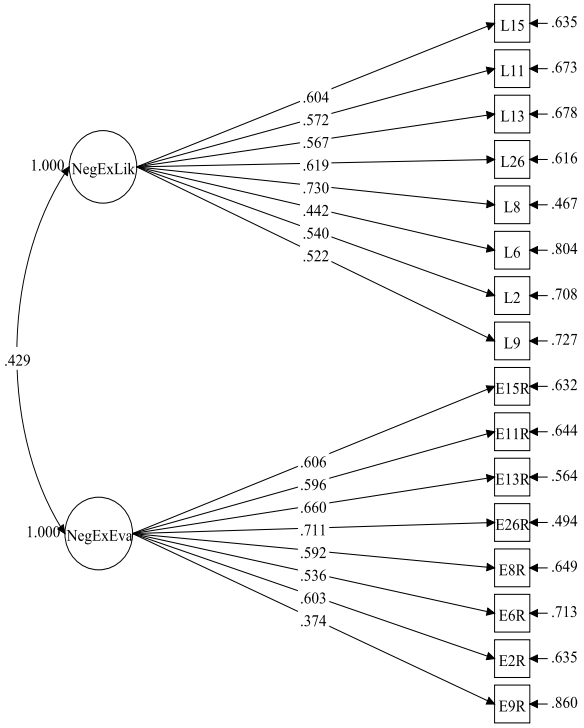

Figure 3.3.4. A CFA of The Negative Expectancies on Imputed Data.

Peer descriptive norms were assessed using a modified version of the Drinking Norms Rating Form (DNRF; Baer, Stacy, & Larimer, 1991). Two items asked participants to estimate 1)

how often their closest friends drink and 2) how much their closest friends drink on a typical weekend evening. Responses to the first item ranged from 1 = *less than once a month* to 7 = *once a day*. Responses to the second item ranged from 1 = *0 drinks* to 6 = *more than 8 drinks*. Two additional items questions asked participants to estimate, on a scale ranging from 1 (*none*) to 7 (*all of them*), the prevalence of binge drinking amongst 1) their close friends and 2) people their age, whom they like and admire. Peer descriptive norms were calculated by taking the average score of the four items, *M* = 3.08 (*SD* = 1.29). The reliability of peer descriptive norms was *a* =.88.

Peer injunctive norms were assessed using an adapted version of Baer's (1994) injunctive norms scale. The scale asked participants to indicate their perceived peer approval of eight drinking behaviors and consequences, with responses ranging from 1 = *strong disapproval* to 7 = *strong approval*. The drinking behaviors and consequences were: 1) drinking alcohol every weekend, 2) drinking enough to feel buzzed, 3) drinking enough to feel tipsy, 4) drinking enough to stumble, 5) drinking enough to blackout, 6) becoming intoxicated at a party, 7) becoming intoxicated on a weeknight, and 8) missing a class because the participant was intoxicated or hung. Responses to these eight items were averaged to reflect peer injunctive norms, *M* =4.12 (*SD* = 1.40). The reliability of peer injunctive norms was *a* =.91.

Control Variables

Binge drinking risk-related beliefs (Perceived Risk, Familiarity, & Control). Two items were used to assess the perceived *risk* associated with binge drinking (i.e. I think binge drinking is *dangerous*/ *harmful*). Two items were used to assess perceived *familiarity* with binge drinking risks (i.e. *I am familiar with*/ *I know a lot about* the risks of binge drinking). Two items were used to asses perceived *control* over binge drinking risks (i.e. *If I choose to binge drink, I can*

decide whether binge drinking would hurt me or not and *I can minimize the risks related to binge drinking*). Responses to these items ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). A second-order factor CFA modeling the three scales (i.e. risk, familiarity, and control) as first-order factors for the general binge drinking beliefs resulted in a bad fit and a scale that combined the six items had a very low reliability (*a =. 38)*. Therefore, binge drinking risk-related beliefs were used as three distinct scales and scores for each scale were calculated by taking the average of the corresponding two items. The correlation between the two risk items was r = .87 and average score was M = 4.46 (SD = 1.58). The correlation between the two familiarity items was r = .77 and average score was M = 5.35 (SD = 1.53). The correlation between the two control items was r = .69 and average score was M = 4.07 (SD = 1.76).

Alcohol perceived fun. Alcohol *Perceived fun* is a scale that consists of three subscales tapping the *laughter*, *adventure*, and perceived *social support* associated with binge drinking episodes. *Laughter* in the drinking episode was assessed through five items tapping the belief that binge drinking is fun. *Adventure* was assessed using seven items tapping the unpredictability associated with the drinking and partying scenes. *Social support* was measured using three items tapping the belief that binge drinking episodes provided contexts for intimacy and peer support. The subscale items were generated by the researcher from a qualitative sociological analysis of college drinking (see Vander Ven, 2011). Responses to the perceived fun items ranged from 1 = *strongly disagree* to 7 = *strongly agree*. The scale and subscale scores were calculated by taking the average scores of the corresponding items. The Cronbach's alpha reliability for the general alcohol perceived fun scale was .96 and it ranged between .91 and .93 for the three subscales. See Table 3.3.9 for the subscale items and descriptive statistics.

Table 3.3.9

Alcohol Perceived Fun Scale: Standardized Factor Loading and Descriptive Statistics

	Standardized Factor Loadings		
	Laughter	Adventure	Support
Items			
Being wasted provides a context for laughter.	.790		
Being wasted is fun.	.786		
Drinking makes everything funny.	.803		
Alcohol makes me feel euphoric.	.797		
Drunken parties or gatherings are loaded with fun.	.853		
Drunken parties or gatherings provide a context for memorable epic adventures.		.847	
Drunken parties or gatherings create a matrix of adventures and unpredictable events.		.783	
Alcohol allows people to open up to any situation.		.749	
The drinking episode is pleasurable because of its unpredictability.		.826	
I look at every night of drinking as a unique adventure where anything can happen.		.813	
Drinking provides an outlet from everyday life that sometimes feels static, scripted, & flavorless.		.765	
I like the unpredictability and chaotic scenes that alcohol delivers.		.787	
Being wasted generates opportunities for offering and receiving social support.			.904
Being wasted provides a context for intimacy.			.843
Being wasted draws a good measure of peer support.			.882
Factor Mean (*SD*)	3.58 (*1.50*)	3.57 (*1.43*)	3.18 (*1.56*)
Cronbach's α	.92	.93	.91

A confirmatory factor analysis was run to validate the factorial structure of the scale. The three subscales were modeled as first-order factors reflecting the higher-order factor *alcohol perceived fun*. Model re-specifications were implemented as necessary. A total of 12 residual covariances were added. The final CFA of alcohol perceived fun resulted in an excellent fit, MLM$\chi^2(75) = 140.027$, $p < .001$, SCF = 1.4180, RMSEA = .049 (90% CI = .036, .061, p =.553), CFI = .983, TLI = .976, SRMR =.024 (See *Figure 3.3.5*).

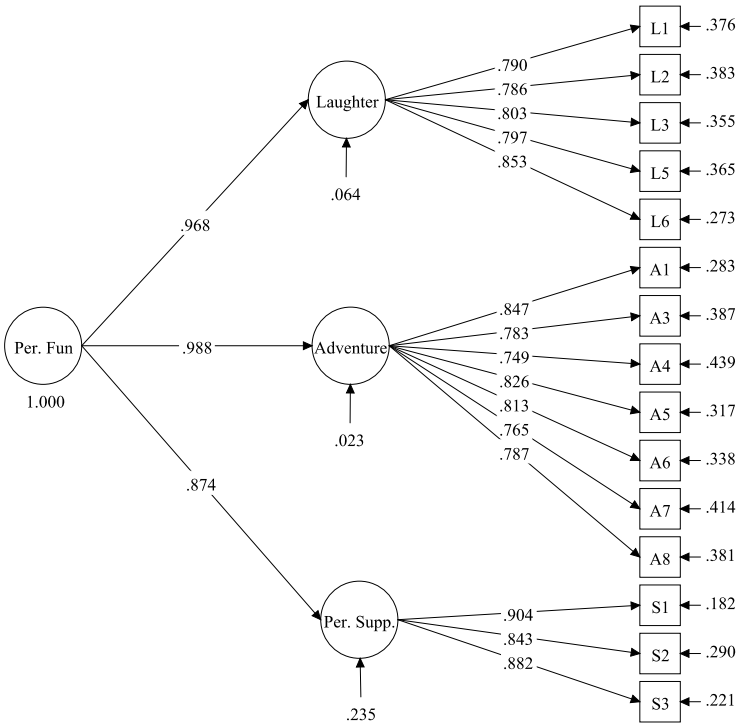

Figure 3.3.5. A CFA of the Alcohol Perceived Fun Scale
Note. Per. Fun = Alcohol Perceived Fun,
Per. Supp. = Perceived Social Support in the Drinking Episode.
Residual covariances are not shown for presentation simplicity.

Frequency of social support. The frequency of social support scale, consisting of five items, asked participants to indicate how frequently they and their significant others and friends

had engaged in social support and reconstruction of the fun parts of the past drinking episode. Participants were asked to indicate how often they and their friends engage in the following activities, following a drunken party: 1) offer social support to one another, 2) attend to the drunk/sick friends, 3) laugh at the sorry shape they are in, & 4) tell stories and epic adventures from the night before, 5) get support and love from friends/boyfriends/girlfriends. The frequency of social support was scaled from 1= *never* to 7= *every time* and was calculated by taking the average score, $M = 3.94$ ($SD = 1.61$). The alpha reliability of the social support frequency was $a = .89$. A CFA of the scale indicated that the five items had factor loadings ranging from .760 to .880.

Social media use. Social media use was measured using an adapted version of the social media nine-item subscale (Rosen, Whaling, Carrier, Cheever, & Rokkum, 2013). Participants were asked to indicate how much they use social media, on a 10-point frequency scale ranging from 1 = *never* to 10 =*all the time*. Three additional items were added to the scale to reflect the frequency that participants use social media to for partying-related activities (see items 10 to 12 in Table 3.3.10). Social media use was calculated by the taking the average score of the twelve items ($M = 4.75$, $SD = 1.61$). The Cronbach's alpha reliability for the social media scale was $a = .90$.

Table 3.3.10
Social Media Use Items & Statistics

Item	M (*SD*)
1. Check your Facebook page or other social networks.	6.70 (*2.26*)
2. Check your social network page from your smartphone.	6.79 (*2.37*)
3. Check social networks at work or school.	6.27 (*2.45*)
4. Post status updates.	2.75 (*1.92*)
5. Post photos	2.85 (*1.73*)
6. Browse profiles and photos.	5.30 (*2.35*)
7. Read postings.	6.28 (*2.34*)
8. Comment on postings, status updates, photos, etc.	4.27 (*2.34*)
9. Click "Like" to a posting, photo, etc.	6.07 (*2.54*)
10. Check your social networks to find out where the parties or social gatherings are.	3.28 (*2.38*)

11. Post photos from the parties/social gatherings you go to	2.57 (*1.90*)
12. Comment or like photos of friends' parties/social gatherings	3.87 (*2.44*)

Alcohol prevalence in social media networks. Alcohol prevalence in social media was measured using two items taken from Stoddard et al. (2012). On a scale ranging from 0 = *none* to 4 = *almost all*, participants were asked to indicate 1) how many of the pictures in their social media networks showed them consuming alcohol, and 2) how many of their friends had posted a message or photo on their wall regarding getting drunk. The correlation between the two items was r = .34. Scores for the alcohol prevalence scale was calculated by taking the average of the two items, M = 3.17 (SD = 2.71).

Positive and Negative Urgency. A shortened version of the UPPS-P Impulsive Behavior Scale (Cyders, Littlefield, Coffey, & Karyadi, 2014) was used to assess positive and negative urgency. Four items reflect positive urgency (PU) and four items reflect negative urgency (NU). Responses, ranging from 1 = *strongly agree* to 7 = *strongly disagree*, were reverse coded and then averaged to calculate an index for positive (M = 2.56, SD =1.23) and negative urgency (M = 3.53, SD = 1.38). The subscales demonstrated good internal consistency with a = .88 for positive urgency and a = .81 for negative urgency. See Table 3.3.11 for the subscale items and statistics.

Table 3.3.11
Positive & Negative Urgency Items & Statistics

	Item	M (*SD*)
PU	1. When I am in great mood, I tend to get into situations that could cause me problems (R).	2.84 (*1.42*)
	2. I tend to lose control when I am in a great mood (R).	2.46 (*1.41*)
	3. Others are shocked or worried about the things I do when I am feeling very excited(R).	2.17 (*1.36*)
	4. I tend to act without thinking when I am really excited (R).	2.76 (*1.58*)
NU	1. When I feel bad, I will often do things I later regret in order to make myself feel better now (R).	2.84 (*1.42*)
	2. Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse (R).	3.32 (*1.74*)
	3. When I am upset I often act without thinking (R).	3.74 (*1.70*)
	4. When I feel rejected, I will often say things that I later regret (R).	3.74 (*1.73*)

Conscientiousness and Openness to Experience. Fourteen items taken from the Big Five Inventory Scale (John & Srivastava, 1999) were used to measure conscientiousness and openness to experience. The items asked participants to indicate the extent to which a given statement was characteristic of them, with responses to the items ranging from 1 = *strongly disagree* to 7 = *strongly agree*. The conscientiousness and openness scales had reliabilities of *a* =.78 and *a* =.88, respectively. See Table 3.3.12 for the subscale items and statistics.

Table 3.3.12
Conscientiousness and Openness to Experience Items & Statistics

Subscale	I see myself as someone who:	M (*SD*)
Conscientiousness	1. Does a thorough job	1.87 (*.859*)
	2. Can be somewhat careless (Reverse coded).	3.40 (*1.59*)
	3. Is a reliable worker	1.64 (*.829*)
	4. Tends to be disorganized (Reverse coded).	3.43 (*1.81*)
	5. Tends to be lazy (Reverse coded).	3.65 (*1.70*)
	6. Perseveres until the task is finished	2.41 (*1.09*)
	7. Does things efficiently	2.28 (*1.06*)
	8. Makes plans and follows through with them	2.29 (*1.10*)
Openness to Experience	1. Is original, comes up with new ideas	2.69 (*1.26*)
	2. Is curious about many different things	1.92 (*.978*)
	3. Has an active imagination	2.24 (*1.20*)
	4. Is inventive	2.82 (*1.35*)
	5. Like to reflect, play with ideas	2.43 (1.13)
	6. Is original, comes up with new ideas	2.64 (1.24)

Demographics. Participants' age, gender, ethnic and racial background, and academic year and achievement were assessed. Moreover, participants were asked to indicate whether or not they are fraternity or sorority members. Furthermore, four items were used to assess family history of alcoholism (Greenbaum et al., 2005). The items asked participants to indicate whether either biological parents or grandparents experienced physical or legal alcohol-related problems. See Table 3.2.1 for the sample demographics.

3.4. Data Analysis

Scale Development and Validation. A series of iterative SPSS exploratory factor analysis with oblique rotation was used to examine the factor structure of the alcohol-related FOMO scale [4]. Parallel analysis (PA) was used to determine the number of factors to retain from the final EFA output. PA employs a Monto Carlo simulation to generate a series of random simulated datasets that parallel the original dataset in terms of the sample size and number of variables and produces eigenvalues for both the original (raw) dataset and the randomly generated simulated datasets. Factors are significant, hence should be retained, only if their original 'larger than 1 eigenvalues' are greater than the corresponding randomly generated eigenvalues (see Çokluk & Koçak, 2016; Hayton, Allen, & Scarpello, 2004; Ledesma & Valero-Mora, 2007; Schmitt, 2011).

After the simple factor structure was established, a confirmatory factor analysis of alcohol-related FOMO scale was carried out in Mplus version 7.2 (Muthén & Muthén, 1998-2012). The model was estimated using an MLM estimator, a robust estimator against violations of normality. The latent and observable variables were specified using the final EFA output. The model was re-specified as necessary. With each single re-specification, model indices were obtained and a chi-square difference test, also known a likelihood ratio test, was calculated using a formula correcting for MLM estimation (MLM$\Delta\chi^2$), to test the hypotheses that the newly imposed parameters significantly improved model fit (see Bryant & Satorra, 2012). Parameters were retained only if they significantly improved model fit, meaning that that they resulted in significant MLM$\Delta\chi^2$. Goodness of model fit was evaluated using the chi-square test, comparative fit index (CFI), and root mean square error of approximation (RMSEA) with its 90% confidence

[4] Oblique rotation is recommended for scales that have a correlating factor structure (Brown, 2009)

interval. Good model fit is typically indicated by lower and non-significant values of chi-square and values that are greater than 0.90 on the CFI and TLI, equal to or less than 0.06 on the RMSEA, and less than .08 on the SRMR. A more stringent approach has advocated for the values of CFI and TLI to be larger than .950 to indicate good model fit (see Byrne, 2012; Hooper, Coughlan, & Mullen, 2008). It is worth noting that the chi-square values tend to be large and significant in moderate and big sample sizes and so model fit normally takes all other fit indices into account.

The final CFA model of alcohol-related FOMO scale was compared to alternative models and the best-fitting model was chosen based on statistical and conceptual criteria. Nomological validity was verified through establishing both the convergent and discriminant validity of the alcohol-related FOMO scale in relation to other similar and different scales. Predictive validity was examined by assessing the ability of the alcohol-related FOMO scale to predict alcohol consumption intentions and behavior. Assessment of the scale's gender bias was conducted through a CFA multi-group analysis.

Hypotheses Testing. Hypotheses testing was carried out using SPSS correlation and hierarchical regression analysis, and structural equation modeling. Correlational and hierarchical regression analyses were initially used to examine the relationships between the variables. Subsequent hypotheses testing was carried out through structural equation modeling using Mplus with an MLM estimator. Measurement models were first estimated and then re-specified to take into account the validity of the factorial structure and potential residual covariances. Structural paths were subsequently added to the best-fitting measurement model. The structural model was re-specified by deleting non-significant paths and adding parameters deemed to be significant based on modification indices' recommendations. With each re-specification, a chi-square

difference test was conducted to test the significance of the re-specification to the model fit and the parameter was retained only if it resulted in a significant MLM$\Delta\chi^2$.

Mplus was also used to test mediation and moderation. Analysis of the mediation and moderation effects in a structural equation modeling context has the advantages of 1) allowing for the simultaneous modeling of many variables, 2) obtaining model fit indices, and 3) eliminating measurement error that is present in the traditional multiple regression analysis (Byrne, 2013; Jaccard & Wan, 1995). Mediation effects were tested using the model indirect command and are reported using the 95% bootstrapped confidence intervals.

To test for moderation, interaction terms between latent variables were first created using the XWITH command and then added to the best-fitting structural models and tested for significance. The significance of the interaction was verified by examining their *p*-value. To determine if the interaction term was significantly improving the fit of the model and worth retaining, a nested model comparison was deemed necessary. It is worth noting that models with latent factors' interactions in Mplus do not yield the conventional fit indices (i.e. chi-square value, CFI, TLI, RMSEA), rendering the chi-square difference test unattainable. However, one way to go around this is to conduct a log-likelihood ratio test between the model with no interaction and the model with the interaction term and compute the difference in degrees of freedom between the two models[5] (Muthén & Asparouhov, 2015). The log-likelihood ratio test produces values that are chi-square distributed, thus can be manually compared, along with the difference in degrees of freedom, to a chi-square table to determine whether the interaction term

[5] The log-likelihood ratio test is computed using the following formula: D = - 2 [(log-likelihood for Model 0) – (log-likelihood for Model 1)], where model 0 is the one with no interaction and model 1 is with the interaction term added.

significantly contributes to model fit. A significant log-likelihood ratio test value indicates that the interaction is worth retaining (see Maslowsky, Jager, & Hemken, 2014).

The only estimator that can be used to estimate interaction effects in Mplus is only ML. Therefore, the models had to be re-estimated using ML to obtain the log-likelihood value that can be accurately used in the log-likelihood ratio test. Another limitation with Mplus modelling of interaction terms is that they do not provide standardized regression coefficients. To get standardized coefficients, indicators were standardized prior to creating factors and interaction terms.

Multi-group Analysis. To test gender differences in the model parameters, a multi-group analysis was conducted by taking the following steps: 1) generating the best-fitting baseline model for each group (i.e. males and females), 2) combining the two best-fitting models in a configural model that freely estimates all parameters (i.e. factor loadings, residual covariances means, and structural paths) to get fit indices that can serve as a criteria for subsequent parameter constraints , 3) imposing a series of hierarchically ordered equality constraints on model parameters (e.g. factor loadings, intercepts, residual covariances, and means) and testing their invariance , 4) relaxing equality constraints on parameters that show evidence of non-invariance across gender. Model invariance is tested by comparing each pair of nested model using the MLM-corrected chi-square difference test (MLM$\Delta\chi^2$). A significant MLM$\Delta\chi^2$ value indicates that the newly imposed equality constraints should be relaxed because the parameters are not equivalent between the groups. In addition to the MLM$\Delta\chi^2$, the difference in CFI (ΔCFI) between the two nested models is occasionally used to determine the significance of imposed equality constraints. ΔCFI that is larger than .01 indicates a significant change in model fit and suggests relaxing equality constraints (Cheung & Rensvold, 2002).

Chapter 4

Alcohol-Related FOMO: Scale Development and Validation

4.1. Data Screening

Normality Assumption. The dataset was screened for normality and univariate outliers. With the exception of alcohol-related problems and alcohol-drinking behavior, all variables were normally distributed, as indicated by their within-acceptable-range skewness and kurtosis values. The alcohol-related problems and alcohol-drinking behavior scales were transformed using the log-linear transformation, to meet the normality assumption. The few severe outliers were recoded as missing.

Missing Data Analysis. Tests were carried out to examine missing data and determine its mechanism and pattern. Missing data analysis revealed that all variables had missing values, with percentages ranging from .2% to 32.9% (see Table 4.1.1 for a partial output of missing data analysis). The highest percentage of missingness was more prevalent towards the end of the survey, and especially with the alcohol expectancies items, where missingness reached a maximum of 33% of the total responses. As reported in the table, the alcohol-related FOMO, the key variable in the study, had missingness that ranged between 8% and 12.7%.

Almost 11% of all values were missing, and more than half of the participants had at least one missing value (see *Figure 4.1.1*). Moreover, missingness appeared to have a monotone pattern, whereby a missing value on an item was likely to be followed by missing values, due to participants' drop out from the survey (see *Figure 4.1.2*). The monotonicity pattern is further confirmed by Table 4.1.1, which attests to the increasing pattern of missing values as the survey progresses.

Little's MCAR test, an informative indicator of whether the data was *Missing Completely At Random* (MCAR), resulted in a significant chi-square test $\chi^2(27704, N = 490) = 28939.688$, $p < .05$; hence ruling out the possibility that the data is missing completely at random (MCAR) and leaving two viable options: missing at random (MAR) and missing not at random (MNAR).

Table 4.1.1
Missing Data Analysis

	N	Mean	Std. Deviation	Missing	
				Count	Percent
Negative Urgency(NU) (item 1)	489	4.70	1.74	1	.2
Past Drink (item 1)	423	1.15	.636	67	13.7
Alcohol-Related FOMO (item 1)	451	2.63	1.784	39	8.0
Alcohol-Related FOMO (item 2)	451	2.44	1.732	39	8.0
Alcohol-Related FOMO (item 3)	451	2.21	1.600	39	8.0
Alcohol-Related FOMO (item 4)	451	2.73	1.856	39	8.0
Alcohol-Related FOMO (item 5)	451	2.71	1.855	39	8.0
Alcohol-Related FOMO (item 6)	447	2.21	1.541	43	8.8
Alcohol-Related FOMO (item 7)	447	1.86	1.339	43	8.8
Alcohol-Related FOMO (item 8)	447	2.04	1.515	43	8.8
Alcohol-Related FOMO (item 9)	447	2.32	1.619	43	8.8
Alcohol-Related FOMO (item 10)	447	2.76	1.931	43	8.8
Alcohol-Related FOMO (item 16)	442	2.79	1.803	48	9.8
Alcohol-Related FOMO (item 17)	442	2.45	1.646	48	9.8
Alcohol-Related FOMO (item 18)	442	2.81	1.960	48	9.8
Alcohol-Related FOMO (item 19)	442	2.96	1.818	48	9.8
Alcohol-Related FOMO (item 25)	436	2.71	1.675	54	11.0
Alcohol-Related FOMO (item 26)	434	2.86	1.711	56	11.4
Alcohol-Related FOMO (item 27)	434	5.06	1.828	56	11.4
Alcohol-Related FOMO (item 28)	433	2.93	1.784	57	11.6
Alcohol-Related FOMO (item 29)	434	2.96	1.760	56	11.4
Alcohol-Related FOMO (item 30)	434	4.12	1.845	56	11.4
Alcohol-Related FOMO (item 31)	429	2.62	1.619	61	12.4
Alcohol-Related FOMO (item 32)	429	2.60	1.636	61	12.4
Alcohol Positive Exp. Eva. (item 13)	351	2.73	1.218	139	28.4
Alcohol Positive Exp. Eva. (item 27)	342	4.50	1.475	148	30.2
Alcohol Positive Exp. Eva. (item 38)	329	5.18	1.484	161	32.9
Age	369	20.56	3.507	121	24.7

Note. The table shows only a partial output of the original missing data analysis. NU = Negative Urgency, TD1 = Typical number of drinks on the first day of the week, THD1 = Typical number of hours drinking on the first day of the week, ALFOMO = Alcohol-related FOMO, Alc. Exp. Eva = Alcohol expectancy evaluation.

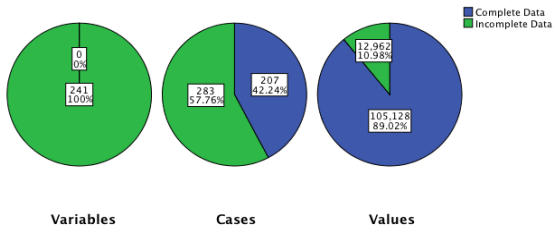

Figure 4.1.1. Overall Summary of Missing Values

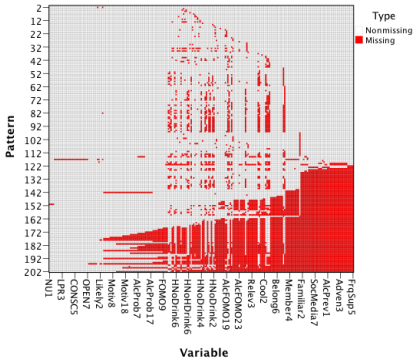

Figure 4.1.2. Missing Value Pattern

Further examination of the data indicated that it was missing at random (MAR), meaning that missingness could be predicted by other observed variables that were included in the study. Table 4.1.2 shows a partial output from the univariate T-Test, which crosstabulates missingness in the row variable (i.e. past drink item 1) with the means in the column variables (i.e. frequency of binge drinking, frequency of preloading, binge drinking willingness item 1 & 2, and binge drinking likelihood item 1 & item 2). The significant T-Test confirms that missingness in the typical number of drinks on Saturday is not random, but is rather significantly associated with the column variables, such that those who did not report the number of drinks had significantly higher tendencies towards binge drinking, preloading behavior, and drinking intentions than those who did report the number of drinks.

Table 4.1.2
Partial Output of the Univariate T-Test of Missing Values

		Binge	Preload	Willing1	Willing2	Likely1	Likely2
Past Drink (item 1)	t	-2.8	-2.8	-2.4	-2.8	-2.9	-2.6
	df	83.2	82.3	77.5	92.1	93.6	89.2
	p (2-tail)	.006	.006	.019	.007	.005	.01
	# Present	422	422	422	422	422	421
	# Missing	67	67	67	67	67	67
	Mean (Present)	2.1	2.1	4.01	3.86	4.2	3.23
	Mean (Missing)	2.67	2.81	5.18	4.61	5.06	4.03

Given that the data was MAR, there was a concern that such missingness would inevitably lead to biased estimates (see Harel, Zimmerman, & Dekhtyar, 2008). When the percentage of missingness is relatively small compared to the sample size (i.e. < .5%), listwise deletion is deemed acceptable (Garson, 2015). However, when missingness is large, listwise deletion can result in a significant loss of cases. Multiple imputation has been the most recommended method when missingness is large and MAR, due to its superiority in capturing the uncertainty and variance of missingness (Rubin, 1996). The iterative imputation process generates estimates that better reflect the data variability and uncertainty, hence reduce estimation bias (Garson, 2015; Rubin, 1996; Yuan, 2010). Therefore, a multiple imputation (*MI*) was conducted when missingness was considered large and analyses on both imputed and non-imputed datasets followed.

4.2. Exploratory Factor Analysis

Given that missingness in alcohol-related FOMO items ranged from 8% to 12%, there was a concern that such missingess could bias the results of this key variable. Therefore, a multiple imputation was performed to generate multiple simulated values for each missing datum. Requesting five multiple imputations in SPSS yielded five datasets that provided different plausible values for the missing information in the original dataset.

In multiply imputed datasets, SPSS creates pooled estimates for some but not all of the statistical analyses. Unfortunately, pooled estimates are not yet available for factor analysis. To circumvent this shortcoming, individual case values across imputations were averaged to create a single mean value for each case, representing an average score for every alcohol-related FOMO item. Although inferior to the pooled estimates[6], the mean case values of imputations is believed

[6] The pooled estimates take into account the within- and between- imputation variance when calculating the standard errors

to yield estimates that are generally similar and are more accurate than estimates based on one single imputation (Garson, 2015).

The procedure of averaging case values across imputations resulted in 34 alcohol-related FOMO (hereafter *ALFOMO*) items that were normally distributed. With a final sample of 490; hence a ratio of over 14 cases per variable, the minimum amount of data for factor analysis was satisfied (see Yong & Pearce, 2013). The factorability of the 34 ALFOMO items was confirmed using various criteria. First, the correlation matrix showed that each of the 34 items had a minimum of one moderate correlation (i.e. ≥ .3) with at least one other item, indicating a reasonable factorability. Second, the Kaiser-Meyer-Olkin (*KMO*) measure of sampling adequacy was .945, well above the recommended value of .6, and Bartlett's test of sphericity was significant, χ^2 (561) = 12666.686, $p < .05$. Third, the diagonals of the anti-image correlation matrix were all over .7. Fourth, all of the items had communalities well above .3, indicating a shared common variance between the items (see Child, 2006). All these indicators attested to the validity of factor analysis as an appropriate statistical procedure with the 34 ALFOMO items.

Two factor extraction methods, namely principal axis factor (PAF) and maximum likelihood (ML), with an oblique rotation (i.e. Promax) were used to examine the factor structure of the proposed ALFOMO scale. Both methods yielded very similar results. Due to its ability to provide accurate standard errors that are subsequently used to calculate model fit, ML has been recently recommended for factor extraction (see Schmitt, 2011). Therefore, results from the ML-based EFA are reported in this study.

The Kaiser criterion for determining the number of factors indicated a six-factor structure, explaining between 42.63% and 3% of the total variance (71%) (see Table 4.2.1). Likewise, the scree plot (see *Figure 4.2.1*) confirmed the presence of at least six factors, with the

first factor accounting for the most explained variance and a nearly-flat line after the sixth factor, suggesting that each successive factor after the sixth is adding a trivial amount of variance. This six-factor model had 6% of the non-redundant residuals with absolute values that are greater than .05[7]. The six-factor model resulted in a significant chi-square $\chi^2(372) = 1234.547$, $p = .000$.

Table 4.2.1
Percentages of Eigenvalue, Explained Variance and Cumulative Variance

Factor	Eigenvalues (%)	Explained Variance (%)	Cumulative Variance (%)
1	14.49	42.630	42.630
2	2.671	7.856	50.486
3	2.081	6.120	56.606
4	1.651	4.857	61.463
5	1.451	4.269	65.732
6	1.019	2.997	68.730
7	.916	2.695	71.425

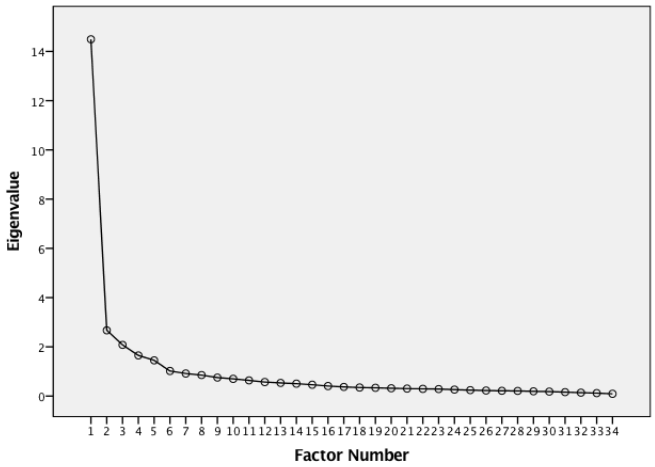

Figure 4.2.1. Scree plot for the 6-factor structure

Table 4.2.2 shows the rotated factor loadings for the six factors. As indicated by the table, four items turned out to be hyperplane items, meaning that they failed to meet the minimum criteria of having a primary factor loading of at least .4 or a cross-loading of .3 or above; hence were subsequently eliminated. These items are ALFOMO20 (i.e. When I have a good time partying, it is important to share it online), ALFOMO21 (i.e. I should seize every opportunity to

[7] Any percentage value that is less than 50% indicate a good model fit (Yong & Pearce, 2013).

drink at college), ALFOMO33 (i.e. I sometimes feel like missing out on the drinking adventures and joys my friends have), and ALFOMO34 (i.e. I believe people can have as much fun without alcohol).

Table 4.2.2

1st EFA Rotated Standardized Factor Loadings of ALFOMO Items

	Standardized Factor Loadings					
Items	1	2	3	4	5	6
It bothers me when I miss an opportunity to drink alcohol with friends (ALFOMO1).	.940					
It disturbs me when I miss a drinking party with friends (ALFOMO2).	1.07					
I feel that I miss out when I don't drink given the opportunity (ALFOMO3).	.895					
I regret it when I miss a drinking party or gathering with friends (ALFOMO4).	.852					
I get jealous when my friends are having fun drinking without me (ALFOMO5).	.902					
I worry that others are having more rewarding experiences as a result of drinking (ALFOMO6).		.630				
I drink because I worry about being left out (ALFOMO7).		.904				
I drink at parties because I worry about missing out on the fun (ALFOMO8).		1.03				
It is important to participate in the drinking games my peers are having (ALFOMO9).		.650				
I get the urge to participate whenever my friends play drinking games (ALFOMO10).		.477				
I feel like missing out when not joining my friends in the drinking games (ALFOMO11).		.539				
I get upset when I am not allowed into a drinking party (ALFOMO12).	.510					
I get disappointed when parties turn out to be alcohol-free (ALFOMO13).	.418					
I need alcohol to have fun at parties (ALFOMO14).		.528				
I drink because I don't want to miss out on the college experience (ALFOMO15).		.543				
10 years from now, I am going to regret not having "crazy" drinking nights with my friends (ALFOMO16).			.943			
10 years from now, I am going to regret not letting loose with alcohol (ALFOMO17).			.895			
I party now so I will not feel like I missed out on these carefree moments in 10 years from now (ALFOMO18).			.547			
In 10 years from now, I will regret NOT partying more (ALFOMO19).			.756			
When I have a good time partying, it is important to share it online (ALFOMO20).						
I should seize every opportunity to drink at college (ALFOMO21).						
My greatest college memories will involve the drinking parties and games (ALFOMO22).					.427	
Alcohol use reduces my enjoyment at parties (*Reverse coded*) (ALFOMO23).				.448		
I think alcohol availability makes parties more fun (ALFOMO24).					.709	
I sometimes feel like missing out on the fun of being "drunk" (ALFOMO25).				.653		
I sometimes feel like missing out on fun of "alcohol buzz" (ALFOMO26).				.754		
I go to parties and gatherings for the social fun of it (ALFOMO27).					.590	
I go to parties and gatherings for the fun of drinking (ALFOMO28).					.621	
I sometimes feel like missing out on the euphoria of alcohol (ALFOMO29).				.614		
I change my circle of friends so that their attitudes towards drinking match mine (ALFOMO30).					.496	
I change my circle of friends so that their drinking behaviors match mine (ALFOMO31).						.944
I change my circle of friends so that their drinking behaviors match mine (ALFOMO32).						.934
I sometimes feel like missing out on the drinking adventures and joys my friends have (ALFOMO33).						
I believe people can have as much fun without alcohol (*Reverse coded*) (ALFOMO34).						

Re-running the EFA without the four hyperplane items resulted in a five-factor solution, respectively explaining nearly 45%, 8%, 6%, 5%, and 4.6% of the total variance (69%). ALFOMO23 (i.e. Alcohol use reduces my enjoyment at parties) had to be eliminated due to equivalent cross-loadings on factor 1 (-.408) and factor 3 (.453) (see Table 4.2.3). ALFOMO30 (i.e. I choose friends who have the same attitudes towards alcohol consumption as me) was also eliminated due to its failure to significantly contribute to any of the five factors. Likewise, ALFOMO27 (i.e. I go to parties for the social fun of it) was eliminated because its communality value dropped to .23.

Table 4.2.3

2nd EFA Standardized Rotated Factor Loadings of ALFOMO Items

Items	Standardized Factor Loadings				
	1	2	3	4	5
It bothers me when I miss an opportunity to drink alcohol with friends (ALFOMO1).	.973				
It disturbs me when I miss a drinking party with friends (ALFOMO2).	.975				
I feel that I miss out when I don't drink given the opportunity (ALFOMO3).	.741				
I regret it when I miss a drinking party or gathering with friends (ALFOMO4).	.851				
I get jealous when my friends are having fun drinking without me (ALFOMO5).	.768				
I worry that others are having more rewarding experiences as a result of drinking (ALFOMO6).				.587	
I drink because I worry about being left out (ALFOMO7).				.776	
I drink at parties because I worry about missing out on the fun (ALFOMO8).				.767	
It is important to participate in the drinking games my peers are having (ALFOMO9).	.656				
I get the urge to participate whenever my friends play drinking games (ALFOMO10).	.705				
I feel like missing out when not joining my friends in the drinking games (ALFOMO11).	.540				
I get upset when I am not allowed into a drinking party (ALFOMO12).	.656				
I get disappointed when parties turn out to be alcohol-free (ALFOMO13).	.674				
I need alcohol to have fun at parties (ALFOMO14).	.432				
I drink because I don't want to miss out on the college experience (ALFOMO15).					
10 years from now, I am going to regret not having "crazy" drinking nights with my friends (ALFOMO16).		.884			
10 years from now, I am going to regret not letting loose with alcohol (ALFOMO17).		.831			
I party now so I will not feel like I missed out on these carefree moments in 10 years from now (ALFOMO18).		.476			
In 10 years from now, I will regret NOT partying more (ALFOMO19).		.688			
My greatest college memories will involve the drinking parties and games (ALFOMO22).	.673				
Alcohol use reduces my enjoyment at parties (*Reverse coded*) (ALFOMO23).	-.408		.453		
I think alcohol availability makes parties more fun (ALFOMO24).	.708				
I sometimes feel like missing out on the fun of being "drunk" (ALFOMO25).			.771		
I sometimes feel like missing out on fun of "alcohol buzz" (ALFOMO26).			.867		
I go to parties and gatherings for the social fun of it (ALFOMO27).					
I go to parties and gatherings for the fun of drinking (ALFOMO28).	.752				
I sometimes feel like missing out on the euphoria of alcohol (ALFOMO29).			.695		
I change my circle of friends so that their attitudes towards drinking match mine (ALFOMO30).					
I change my circle of friends so that their drinking behaviors match mine (ALFOMO31).					.960
I change my circle of friends so that their drinking behaviors match mine (ALFOMO32).					.912

Re-running EFA with the remaining 27 items yielded a five-factor structure, explaining nearly 49%, 8%, 6%, 5%, 4% of the total variance (≈ 73%). This model resulted in a chi-square $\chi^2(226) = 1101.456$, $p = .000$, representing an improvement from the initial chi-square value. As indicated by the rotated factor loadings (see Table 4.2.4), ALFOMO14 (i.e. I need alcohol to have fun at parties) no longer had a significant contribution to the first factor, hence it was removed from subsequent analysis.

Table 4.2.4

3rd EFA Standardized Rotated Factor Loadings of ALFOMO Items

	Standardized Factor Loadings				
Items	1	2	3	4	5
It bothers me when I miss an opportunity to drink alcohol with friends (ALFOMO1).	1.00				
It disturbs me when I miss a drinking party with friends (ALFOMO2).	1.00				
I feel that I miss out when I don't drink given the opportunity (ALFOMO3).	.754				
I regret it when I miss a drinking party or gathering with friends (ALFOMO4).	.852				
I get jealous when my friends are having fun drinking without me (ALFOMO5).	.771				
I worry that others are having more rewarding experiences as a result of drinking (ALFOMO6).		.649			
I drink because I worry about being left out (ALFOMO7).		.898			
I drink at parties because I worry about missing out on the fun (ALFOMO8).		.955			
It is important to participate in the drinking games my peers are having (ALFOMO9).	.574				
I get the urge to participate whenever my friends play drinking games (ALFOMO10).	.648				
I feel like missing out when not joining my friends in the drinking games (ALFOMO11).	.461				
I get upset when I am not allowed into a drinking party (ALFOMO12).	.626				
I get disappointed when parties turn out to be alcohol-free (ALFOMO13).	.682				
I need alcohol to have fun at parties (ALFOMO14).					
I drink because I don't want to miss out on the college experience (ALFOMO15).		.425			
10 years from now, I am going to regret not having "crazy" drinking nights with my friends (ALFOMO16).			.894		
10 years from now, I am going to regret not letting loose with alcohol (ALFOMO17).			.839		
I party now so I will not feel like I missed out on these carefree moments in 10 years from now (ALFOMO18).			.475		
In 10 years from now, I will regret NOT partying more (ALFOMO19).			.687		
My greatest college memories will involve the drinking parties and games (ALFOMO22).	.685				
I think alcohol availability makes parties more fun (ALFOMO24).	.696				
I sometimes feel like missing out on the fun of being "drunk" (ALFOMO25).				.813	
I sometimes feel like missing out on fun of "alcohol buzz" (ALFOMO26).				.909	
I go to parties and gatherings for the fun of drinking (ALFOMO28).	.741				
I sometimes feel like missing out on the euphoria of alcohol (ALFOMO29).				.727	
I change my circle of friends so that their drinking behaviors match mine (ALFOMO31).					.965
I change my circle of friends so that their drinking behaviors match mine (ALFOMO32).					.923

Re-running the EFA with the remaining 26 items resulted in a five-factor model explaining over 73% of the variance and with a chi-square $\chi^2(205) = 928.956$, $p < .001$. The rotated factor loadings for this model are shown in Table 4.2.5. Correlations between the factors are reported in Table 4.2.6.

Table 4.2.5

4th EFA Standardized Rotated Factor Loadings of ALFOMO Items

Items	Standardized Factor Loadings				
	1	2	3	4	5
It bothers me when I miss an opportunity to drink alcohol with friends (ALFOMO1).	.995				
It disturbs me when I miss a drinking party with friends (ALFOMO2).	1.00				
I feel that I miss out when I don't drink given the opportunity (ALFOMO3).	.750				
I regret it when I miss a drinking party or gathering with friends (ALFOMO4).	.849				
I get jealous when my friends are having fun drinking without me (ALFOMO5).	.768				
I worry that others are having more rewarding experiences as a result of drinking (ALFOMO6).		.642			
I drink because I worry about being left out (ALFOMO7).		.893			
I drink at parties because I worry about missing out on the fun (ALFOMO8).		.925			
It is important to participate in the drinking games my peers are having (ALFOMO9).	.576				
I get the urge to participate whenever my friends play drinking games (ALFOMO10).	.648				
I feel like missing out when not joining my friends in the drinking games (ALFOMO11).	.463				
I get upset when I am not allowed into a drinking party (ALFOMO12).	.624				
I get disappointed when parties turn out to be alcohol-free (ALFOMO13).	.678				
I drink because I don't want to miss out on the college experience (ALFOMO15).		.412			
10 years from now, I am going to regret not having "crazy" drinking nights with my friends (ALFOMO16).			.893		
10 years from now, I am going to regret not letting loose with alcohol (ALFOMO17).			.838		
I party now so I will not feel like I missed out on these carefree moments in 10 years from now (ALFOMO18).			.476		
In 10 years from now, I will regret NOT partying more (ALFOMO19).			.687		
My greatest college memories will involve the drinking parties and games (ALFOMO22).	.681				
I think alcohol availability makes parties more fun (ALFOMO24).	.692				
I sometimes feel like missing out on the fun of being "drunk" (ALFOMO25).				.814	
I sometimes feel like missing out on fun of "alcohol buzz" (ALFOMO26).				.908	
I go to parties and gatherings for the fun of drinking (ALFOMO28).	.737				
I sometimes feel like missing out on the euphoria of alcohol (ALFOMO29).				.727	
I change my circle of friends so that their drinking behaviors match mine (ALFOMO31).					.968
I change my circle of friends so that their drinking behaviors match mine (ALFOMO32).					.914

Table 4.2.6
ALFOMO Factor Correlation Matrix

Factor	1	2	3	4	5
1	–				
2	.684**	–			
3	.608**	.529**	–		
4	.581**	.565**	.563**	–	
5	.186*	.346*	.231*	.246*	–

**Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

With the five-factor solution emerging from the final EFA, a decision had to be made on the number of factors to be retained. Research on factor retention from exploratory factor analysis has pointed out the tendency of the Kaiser criterion towards over-extraction (see Hayton, Allen, & Scarpello, 2004). The five-factor structure is, therefore, likely to be an overestimation caused by sample noise (Franklin, Gibson, Robertson, Pohlmann, & Fralish, 1995). Arguments against retaining the fifth factor can be also based on at least two grounds. First, it has relatively low correlations with the other factors (see Table 4.2.6), raising concerns about its validity as a sub-factor of ALFOMO scale. Second, the fact that it is made up of only two items demands that it must be interpreted with caution and may as well be problematic in subsequent structural equation modeling (Tabachnick & Fidell, 2001).

Parallel analysis (PA) was implemented to help determine the appropriate number of factors that should be extracted from the remaining 26 ALFOMO items. Running the PA syntax that was written by O'Conner (2000) in SPSS resulted in four significant eigenvalues that were larger than the corresponding simulated eigenvalues (see Table 4.2.7). Based on the PA output, only the first three factors were to be retained. Although the eigenvalue of fourth factor extracted from the actual data was slightly less than recommended arbitrary value of 1, a decision for its retention was made because of its proximity to the value of 1 and its high correlations with the first three factors.

Table 4.2.7

Parallel Analysis: Eigenvalues of the Actual Data and the Simulated Data

Factor	Eigenvalues of the actual data	Eigenvalues of the simulated data[a]
1	13.008668	.580819
2	1.910193	.499612
3	1.357418	.439681
4	.967524	.393555

[a] The simulated eignevalues are based on 1000 iterations and 95% confidence intervals.

For parsimony purposes, only the first five items of the first factor were retained. These items have the highest factor loadings and were a unique factor in the first EFA (see Table 4.2.2), thus are likely to represent a more stable factor. Items 9, 10, & 11, which were part of the first factor, were originally and theoretically grouped around drinking games, hence making it more logical and interpretable to group them into a second factor. Again, for the sake of parsimony, only three items (i.e. items 6-7) with the highest factor loadings were retained for the third factor. The fourth factor has four items with highest loadings (i.e. items 16-19) and the fifth factor has three items (i.e. items 25, 26, &29).

Composite scores were created for each of the five factors. Factors were labelled parties, games, fun, anticipated regret, and buzz to respectively represent fear of missing out on the drinking parties, drinking games, the fun associated with drinking, anticipated regret as a result of not engaging in college drinking, and missing the buzz feeling associated with alcohol. Higher scores indicate greater alcohol-related FOMO on each of these aspects. Factor loadings, alpha reliabilities, and descriptive statistics of the five subscales are presented in Table 4.2.8. As can be seen in the table, the skewness and kurtosis of the factors remained within the acceptable range of normal distribution. To sum up, exploratory factor analyses eliminated seven items and revealed five distinct factors underlying the alcohol-related FOMO among college students. These factors demonstrated good internal consistencies and approximated normal distribution.

Table 4.2.8

ALFOMO Standardized Factor Loadings and Descriptive Statistics

	Standardized Factor Loadings				
Items	Parties	Games	Fun	AR	Buzz
It bothers me when I miss an opportunity to drink alcohol with friends (ALFOMO1).	.995				
It disturbs me when I miss a drinking party with friends (ALFOMO2).	1.01				
I feel that I miss out when I don't drink given the opportunity (ALFOMO3).	.750				
I regret it when I miss a drinking party or gathering with friends (ALFOMO4).	.849				
I get jealous when my friends are having fun drinking without me (ALFOMO5).	.768				
It is important to participate in the drinking games my peers are having (ALFOMO9).		.648			
I get the urge to participate whenever my friends play drinking games (ALFOMO10).		.463			
I feel like missing out when not joining my friends in the drinking games (ALFOMO11).		.624			
I worry that others are having more rewarding experiences as a result of drinking (ALFOMO6).			.642		
I drink because I worry about being left out (ALFOMO7).			.893		
I drink at parties because I worry about missing out on the fun (ALFOMO8).			.925		
10 years from now, I am going to regret not having "crazy" drinking nights with my friends (ALFOMO16).				.893	
10 years from now, I am going to regret not letting loose with alcohol (ALFOMO17).				.838	
I party now so I will not feel like I missed out on these carefree moments in 10 years from now (ALFOMO18).				.476	
In 10 years from now, I will regret NOT partying more (ALFOMO19).				.687	
I sometimes feel like missing out on the fun of being "drunk" (ALFOMO25).					.814
I sometimes feel like missing out on fun of "alcohol buzz" (ALFOMO26).					.908
I sometimes feel like missing out on the euphoria of alcohol (ALFOMO29).					.727
Factor Mean (*SD*)	2.542 (*1.60*)	2.490 (*1.59*)	2.039 (*1.33*)	2.754 (*1.55*)	2.847 (*1.52*)
Factor Skewness	.744	.709	1.308	.483	.280
Factor Kurtosis	-.515	-.741	.937	-.758	-1.04
Cronbach's α	.95	.89	.90	.88	.87

Note. AR = Anticipated regret about not engaging in college drinking. All factor loadings are significant at $p < .001$

4.3. Confirmatory Factor Analysis

A Confirmatory Factor Analysis (CFA) was conducted to verify the factorial structure of the alcohol-related FOMO scale (hereafter the ALFOMO scale). CFA was run in Mplus using MLM, a maximum likelihood estimator with standard errors and a mean-adjusted chi-square statistics that are robust to multivariate non-normality (Muthén & Muthén, 1998-2012). The eighteen ALFOMO items were modeled as indicators of the corresponding five latent factors. The five latent variables were scaled by constraining the loading of the first indicator in each congeneric set of items to the value of 1.0. Factor loadings were freely estimated and no cross-loadings or error covariance were specified. The five-factor model resulted in an adequate fit, MLM$\chi^2(125) = 305.677$, $p < .001$, RMSEA = .058 (90% CI = .05, .07; $p = .058$), CFI = .967, TLI = .953, SRMR =.05. All item loadings were significant at $p < .001$ and well above .70 on their respective factors. Correlations between factors were significant and ranged between .50 and .83.

Despite the adequate fit, modification indices suggested adding a number of parameters that warranted a reduction in the chi-square test statistic. It is worth noting that the suggestions of modification indices are data-driven, thus might be capitalizing on chance attributes of the sample (see Byrne, 2013; Hox & Bechger, 1998). The fact that these re-specifications may be lacking in terms of theoretical considerations requires caution in their implementation. The general rule is that re-specifications are implemented only if they are theoretically legitimate (Hox & Bechger, 1998). It is also worth acknowledging that any resulting post hoc model re-specifications are exploratory in nature, thus shifting from a confirmatory to exploratory mode of analysis (Byrne, 2013; Mueller & Hancook, 2008).

Two cross-loadings and five error covariances that were theoretically justifiable were added to the model one by one. The two cross-loadings - Parties by ALFOMO18 (i.e. AF18: I party at college now so I will not feel like I missed out on these carefree moments in 10 years from now) and Fun by ALFOMO10 (i.e. AF10: I get the urge to participate whenever my friends play drinking games) appeared to be legitimate given 1) the theoretical overlap in the partying aspect in the first and the motivational affects associated with following the crowd in the second, 2) the fact that items' cross-loadings are more aligned with reality than single loadings (see Asparouhov & Muthén, 2009). The residual covariance between ALFOMOF10 and ALFOMOF6 (i.e. I worry that others are having more rewarding experiences as a result of drinking) also seemed plausible considering that the urge to participate in drinking games could be at least partially invoked by the perceived fun associated with them, hence might be influenced by a common factor not included in the model. The other four error covariances (AF1 &AF2, AF6 & AF8, AF9 & AF10, AF18 & AF19) were also deemed theoretically justifiable as the items in each pair belonged to the same latent factor, thus they might have had a shared variance not accounted for by the latent factor in the model.

After each parameter was added, model fit indices were obtained and an MLM-corrected chi-square difference test was calculated to test the hypothesis that the newly imposed parameters on the baseline model significantly improved model fit. Since the difference in chi-square values ($MLM\Delta\chi^2$) along with difference in degrees of freedom (Δdf) between two nested models are chi-square distributed, they can be used to manually check significance using a χ^2 table (Bryant & Satorra, 2012). Significant $MLM\Delta\chi^2$ value indicates that the newly added parameter is significantly improving the model fit, hence worth retaining. Non-significant $MLM\Delta\chi^2$ value indicates that the two nested models are statistically equivalent and newly added

parameter is not significantly improving the model fit, thus can be eliminated from the model for parsimony purposes (Werner & Schermelleh-Engel, 2010).

With the addition of every error covariance, there was a significant improvement in the chi-square test statistic (i.e. all statistically significant at $p < .01$), indicating the added parameter is significant enough to be retained (see Table 4.3.1). The final re-specified model resulted in a very good fit, MLM$\chi^2(118) = 175.796$, $p < .001$, RMSEA = .034 (90% CI = .023, .044, p = .997), CFI = .988, TLI = .984, SRMR =.029. The final model is shown in *Figure 4.3.1*.

Table 4.3.1
ALFOMO CFA Model Re-specifications

	χ^2	df	SCF	RMSEA	CFI	TLI	SRMR	MLM$\Delta\chi^2$	df
Initial CFA 5-Factor	305.677	125	1.3956	.058	.967	.953	.05		
+ Parties by AF18	259.105	124	1.4042	.050	.971	.965	.037	190.667	1
+ Fun by AF10	228.417	123	1.3980	.044	.978	.972	.035	20.541	1
+ Error Cov. (6 & 11)	213.924	122	1.3988	.042	.970	.976	.035	15.449	1
+ Error Cov. (1 & 2)	203.184	121	1.3930	.040	.983	.978	.034	7.7128	1
+ Error Cov. (18 & 19)	193.000	120	1.3935	.037	.984	.980	.034	10.570	1
+ Error Cov (6 & 8)	183.407	119	1.3957	.035	.986	.982	.032	11.456	1
+ Error Cov (9 & 10)	175.796	118	1.3865	.034	.988	.984	.029	4.933	1

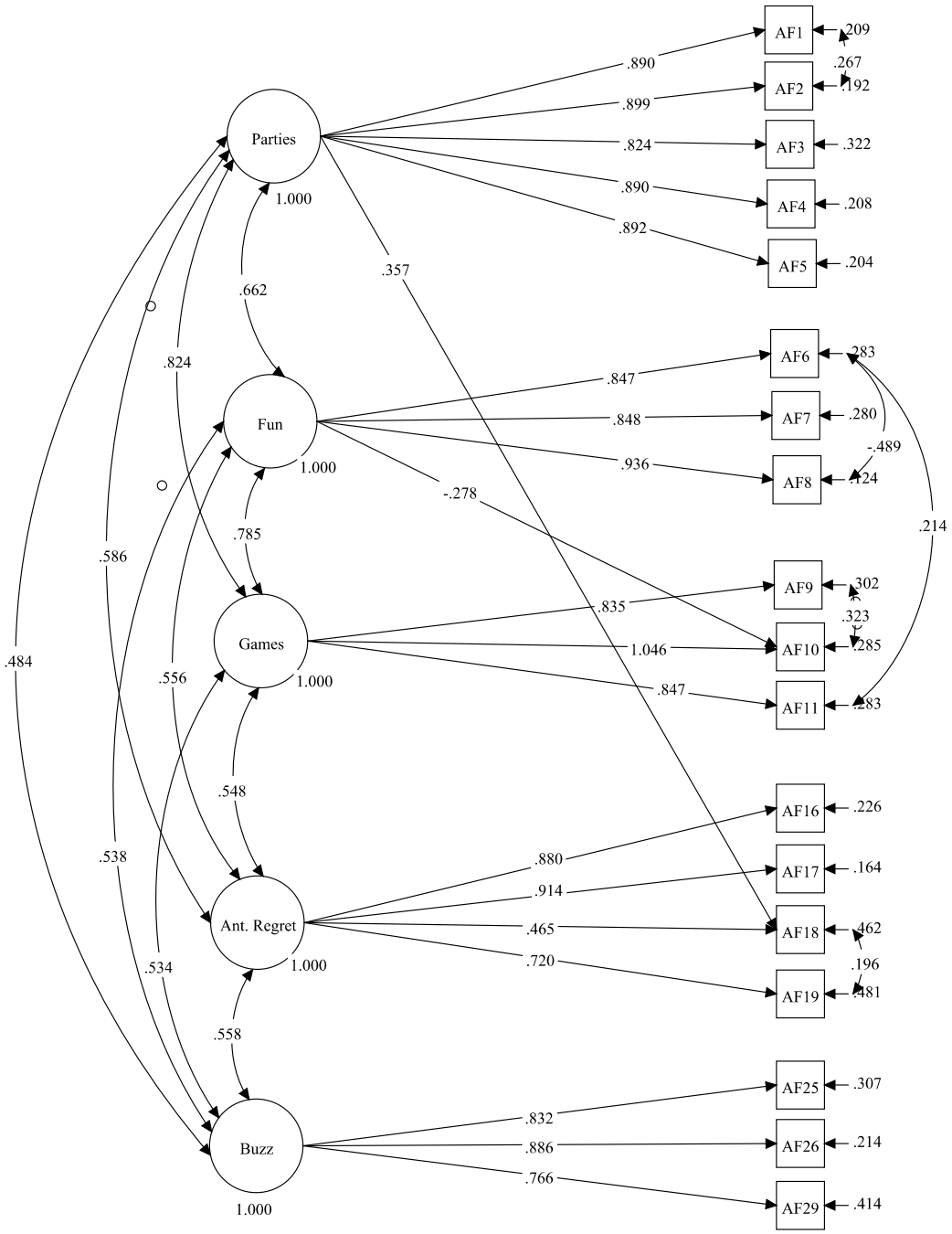

Figure 4.3.1. The Five-Factor CFA ALFOMO Model
Note. AF = ALFOMO

4.4. Alternative Models

The previous *ALFOMO* CFA model was compared with three alternative plausible models: 1) a first-order one factor in which all items were loaded on a single latent construct, 2) a second-order five factor model where all of the five factors of alcohol-related FOMO were modeled as first-order factors influenced by the higher order construct, namely *alcohol-related FOMO*, and 3) a three-factor model comprising a) a one second-order factor that has the first three factors (i.e. parties, games, & fun) modeled as first-order factors and the hypothesized factors of b) anticipated regret and, c) buzz. The reasoning for the second alternative model is that the high magnitude of correlations among the factors could reflect a higher order factor. The reasoning for the last alternative model was justified by the exceptionally high correlations (r >.67) as well as the underlying theoretical overlap between the first three factors, in that they are likely to be more prominent and salient in the social drinking context.

Each constrained (i.e. nested) model was compared to its antecedent less constrained (i.e. baseline) model and a chi-square difference test (MLM$\Delta\chi^2$) was calculated to test if the nested model is significantly better than the less constrained model. As shown in Table 4.4.1, the chi-square difference test indicates that each nested model is significantly better than its previous baseline model. The final five-factor ALFOMO model, the most constrained of all models, was also statistically better that the its baseline model, MLM$\Delta\chi^2(4) = 20.4093$, $p < .001$.

Despite the initial preference of the five-factor model[8], subsequent models incorporating the five-factor model with the drinking-related outcomes were tainted with suppression effects, due to the high correlations and multicollinearity among the factors. Therefore, a decision was

[8] In addition to the significant MLM$\Delta\chi2$, the preference was also based on the relative parsimony of the model and its statistical ability to allow for the direct paths between each of the latent factors and the drinking-related outcomes, which could show the differential effects of the five factors.

made to resort to the second-order five factor model, which is theoretically defendable, given the high correlations among the factors. Moreover, higher order models generally provide more parsimonious and interpretable findings and are particularly preferred when factors were originally hypothesized to measure the same general construct (Chen, Sousa, & West, 2005). That was the reason the second-order one factor model was more preferred than the second-order three factor model. The second-order one factor model (see *Figure 4.4.1*) had a very good and satisfactory fit, MLM$\chi^2(123) = 213.665$, $p < .001$, RMSEA = .041 (90% CI = .032, .050, p = .942), CFI = .981, TLI = .976, SRMR =.045.

Table 4.4.1
Alternative Model Comparisons

	χ^2	df	RMSEA	CFI	TLI	SRMR	MLM$\Delta\chi^2$	df
1st Order One-Factor Model	1216.492	130	.139	.769	.722	.094		
2nd Order Five-Factor Model	213.665	123	.041	.981	.976	.045	835.215	7
Three-Factor Model	195.497	122	.037	.984	.980	.036	23.1047	1
Five-Factor Model	175.796	118	.034	.988	.984	.029	20.4093	4

Since missing data analysis indicated that that data was at least partially missing at random (MAR), there was a concern that missing data might have biased the model estimation. Therefore, the final second-order one factor model was re-run on an imputed dataset that was generated from fifty imputations in Mplus. Mplus employs a Markov Chain Monte Carlo (MCMC) simulation to generate multiple imputations of missing data – resulting in multiple imputed datasets. Each of the fifty imputed datasets is an independent draw from the missing data posterior (see Asparouhov & Muthén, 2010). After creating the fifty imputed datasets, Mplus averages parameter estimates from each imputed dataset and computes standard errors taking into account the within- and between-imputation variance. The result is an imputed dataset that captures the variance and uncertainty of missing data and that can be used for further statistical analysis.

The second-order five factor CFA model based on the imputed dataset (see *Figure 4.4.2*) was very similar to the non-imputed-data-based model in terms of the factorial structure. Although factor loadings seem to be slightly inflated in the non-imputed-data-based model, where missingness was handled with list-wise deletion, they are closely similar to those of the imputed-data-based model. Likewise, model fit indices indicated a similarly good fit, MLMχ^2(123) = 154.939, RMSEA = .032, CFI = .983, TLI = .979, SRMR =.053[9].

[9] SEM using imputed data does not provide the *p*-value for the chi-square test and *p*-value and confidence intervals for RMSEA.

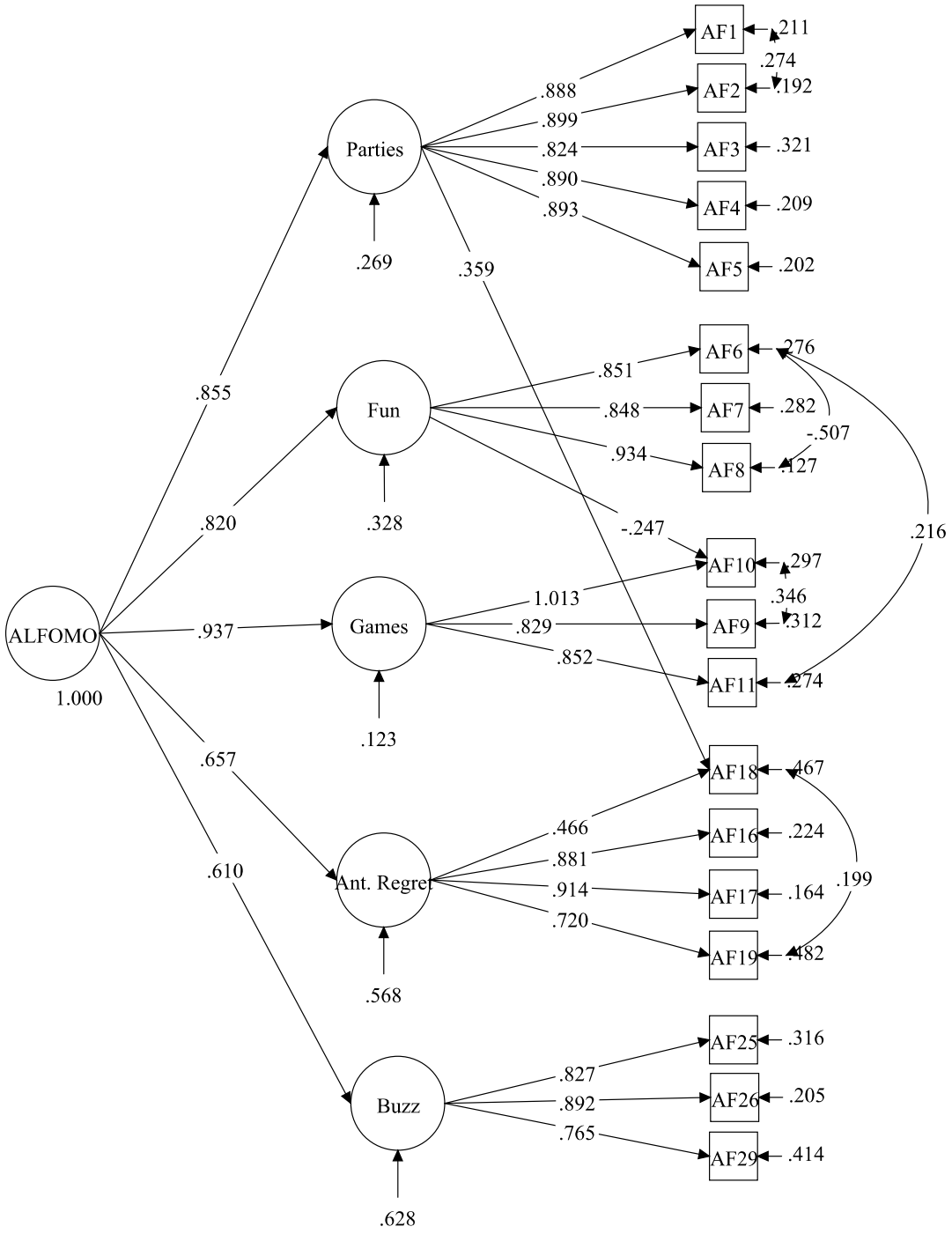

Figure 4.4.1. The Second-Order-One-Factor CFA ALFOMO Model Based on Non-Imputed Data

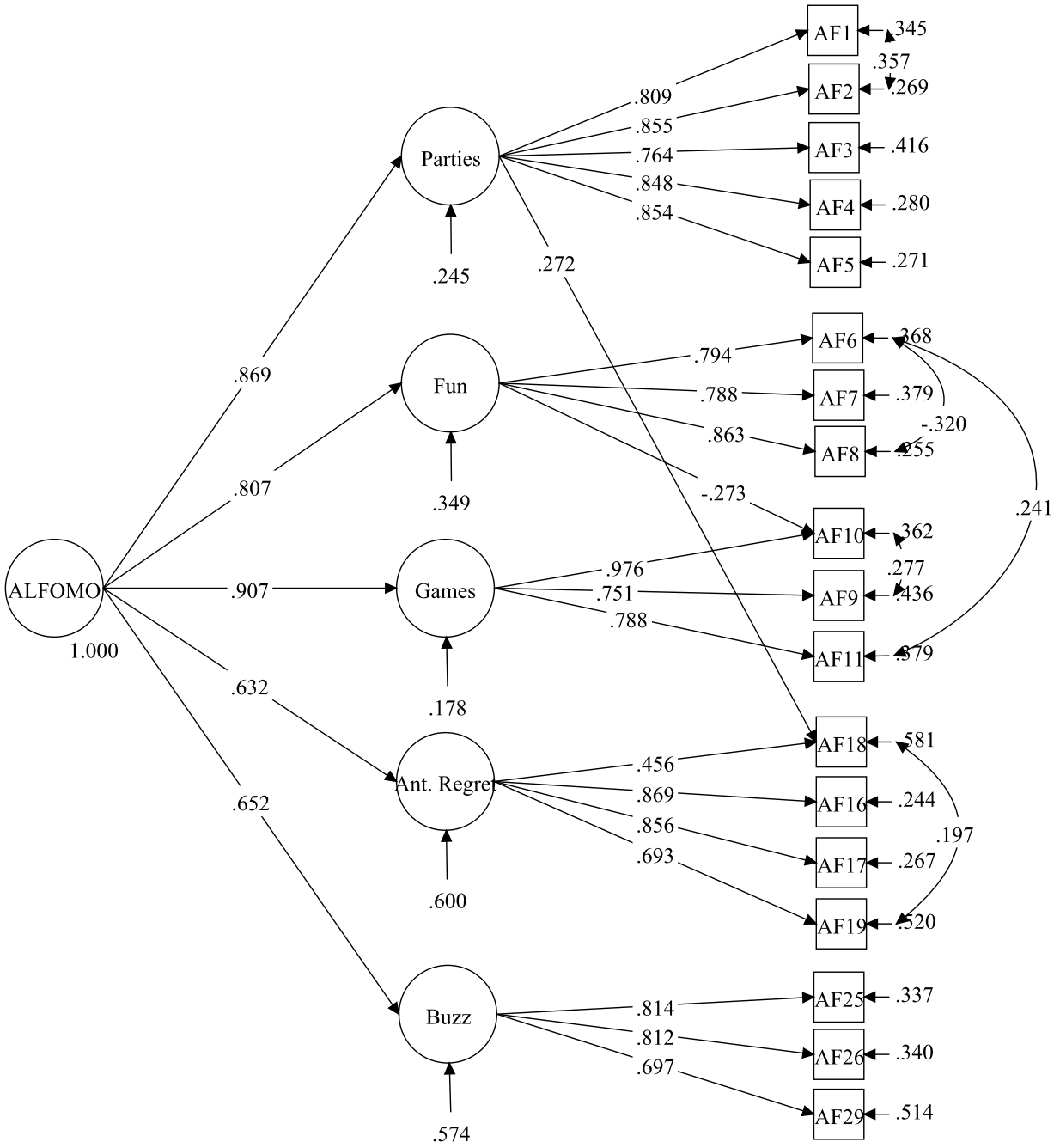

Figure 4.4.2. The Second-Order-One-Factor CFA ALFOMO Model Based on Imputed Data

4.5. Scale Validation

Convergent Validity. Convergent validity is established if the newly-developed measure significantly correlates with established theoretically-related constructs (Kim & Kim, 2010). Convergent validity was assessed by comparing the general scale of ALFOMO and its sub-scales with established measures of individual differences (i.e. FOMO and positive and negative urgency), attitudes towards alcohol consumption, drinking motives, past drinking behavior, and binge drinking intentions (see Table 4.5.1). Examination of the specific subscales revealed that the five sub-scales (i.e. parties, games, fun, anticipated regret, and buzz) had correlations ranging between .29 and .48 with the general FOMO scale, thus confirming that individuals who tend to experience alcohol-related FOMO are also likely to experience the general fear of missing out.

The five ALFOMO sub-scales were also significantly and positively associated with two of the impulsivity scales, namely *negative urgency* (*NU*) and *positive urgency* (*PU*), such that those with greater alcohol-related FOMO also reported higher dispositional tendencies towards rash actions when experiencing extreme positive or negative emotions (Cyders & Smith, 2008)[10]. The five sub-scales had weaker correlations with conscientiousness (tendency to be vigilant), and openness to experience (see Table 4.5.1)[11].

The general ALFOMO scale and its subscales are also highly and positively correlated with the positive attitudes towards drinking and the general drinking motives scale. The social and conformity motives of drinking are particularly highly related to ALFOMO, with a correlation greater than .5. The general ALFOMO scale is also positively and moderately

[10] The relatively higher association between ALFOMO scales and negative urgency further attests to the upward comparison (i.e. others are having more fun and rewarding experiences) that lies at the heart of FOMO and triggers the fear of missing out response.

[11] Such lack of significant association is not surprising given the lack of theoretical overlap among these constructs. The consciousness scale focuses on being a reliable person. Openness to experience measures willingness to engage in new experiences.

associated with early onset of alcohol use, frequencies of binge drinking and preloading, alcohol-related problems, and binge drinking intentions (i.e. willingness and likelihood), thus confirming its predictive validity in the context of alcohol consumption (see Table 4.5.1).

Table 4.5.1
Convergent, Discriminant, & Criterion-Related Validity of Alcohol-Related FOMO Scale & Subscales

	ALFOMO	Parties	Games	Fun	Ant. Regret	Buzz
FOMO	.519**	.483**	.353**	.479**	.396**	.288**
NU	.346**	.341**	.312**	.347**	.347**	.229**
PU	.248**	.269**	.265**	.320**	.167**	.191**
Openness	.172**	.189**	.121*	.154**	.094	.072
Conscientiousness	.212**	.156**	.145**	.228**	.206**	.165**
Attitudes	.586**	.600**	.534**	.314**	.476**	.364**
Drinking motives	.711**	.687**	.639**	.527**	.529**	.443*
Social motives	.630**	.625**	.583**	.407**	.477**	.391**
Conformity motives	.613**	.629**	.562**	.362**	.456**	.378**
Social media use	.268**	.274**	.197**	.168**	.270**	.147**
Early onset of alcohol use	.323**	.293**	.304**	.251**	.258**	.215**
Frequency of binge drinking	.442**	.500**	.413**	.235**	.324**	.199**
Frequency of preloading	.414**	.478**	.351**	.170**	.366**	.199**
Alcohol-related problems	.451**	.470**	.413**	.351**	.325**	.213**
Binge drinking willingness	.592**	.630**	.606**	.365**	.439**	.282**
Binge drinking likelihood	.514**	.566**	.509**	.265**	.439**	.282**
Impairment likelihood	.073	0.074	0.07	0.078	0.114	.193**
Self-perception likelihood	.051	0.025	-0.053	.132*	0.038	0.041

**Correlation is significant at the 0.01 level. * Correlation is significant at the 0.05 level.

Discriminant Validity. Discriminant validity has been defined as "the degree to which the absolute value of the correlation between two constructs differs from 1" (Reichardt & Coleman, 1995, as cited in Hayes et al., 2005, p. 315). With this definition, discriminant validity could be established if 1) each of the five ALFOMO subscales was statistically distinguishable from the other subscales, and 2) the general ALFOMO scale and subscales were statistically distinct from measures with which they share a significant variance (e.g. FOMO, NU, PU). Discriminant validity between the five ALFOMO sub-factors was previously implied by the analysis of the alternative models, whereby the second-order five-factor model resulted in a much better fit than the first-order one-factor model where all items were forced to load on a single latent variable (see Table 4.4.2). The superiority of the five-factor model over the one-factor model simply

signifies the distinctiveness of each of the five factors and confirms that the fifteen ALFOMO items were discriminable enough to support the five-factor model.

Discriminant validity between the ALFOMO subscales and established measures with which they share a significant variance was assessed through comparing the average variance extracted from each latent variable with its correlates. To satisfy the requirement for discriminant validity, the average variance extracted (AVE) for each factor must be greater than its shared variance (i.e. squared correlation coefficients) with other factors (see Bertea & Zait, 2011; Segars, 1997). This method is especially relevant in cases where convergent validity has been confirmed between scales and discriminant validity is needed to verify that none of the scales is a redundant measure of the other constructs (Hayes et al., 2005). As reported in Table 4.5.2, the square root of AVE (see the diagonal) for each of the five ALFOMO factors is well above .5[12] and higher than the variance shared with other factors (see the off-diagonal) — indicating an acceptable discriminant validity amongst the ALFOMO subscales and between the general ALFOMO scale and other scales of interest (i.e. FOMO, PU, NU, and social and conformity motives).

Table 4.5.2
*Average Variance Extracted & Shared Variance**

	1	2	3	4	5	6	7	8	10	11
1. Parties	**.88**									
2. Games	.45	**.88**								
3. Fun	.69	.59	**.82**							
4. Ant. Regret	.50	.35	.38	**.78**						
5. Buzz	.20	.28	.28	.35	**.83**					
6. FOMO	.29	.22	.20	.23	.14	**.66**				
7. PU	.05	.07	.05	.01	<.01	<.01	**.80**			
8. NU	.10	.14	.10	.08	.05	.17	.25	**.73**		
10. Social motives	.44	.18	.38	.23	.18	.09	<.01	.03	**.88**	
11. Conformity motives	.30	.59	.35	.23	.21	.12	.06	.07	.28	**.77**

*The diagonal values are the square root of the average variance extracted from the corresponding latent variable. The off-diagonal values are the shared variance between the respective factors.

[12] AVE that is less than .50 indicate that the variance due to measurement error is larger than the variance captured by the respective factor (Segars, 1997).

Another approach to establishing discriminant validity has been built on correlational analysis between the scale of interest and scales that are theoretically unrelated. Discriminant validity is evident if the general ALFOMO scale and sub-scales have weak to zero correlations with theoretically-unrelated scales. Correlational analysis showed non-significant correlations between the general ALFOMO scale and sub-scales and two of the alcohol expectancies (i.e. *impairment expectancies likelihood* & *self-perception expectancies likelihood*), which, in contrast to the positive valence of the five sub-scales, tap into the negative aspect of alcohol consumption (see Table 4.5.1). However, there were two exceptions from this pattern as weak yet significant correlations were noted between *buzz* and *impairment expectancies likelihood* and *fun* and *self-perception expectancies Likelihood*. These correlations should not come as a surprise since these scales share some theoretical overlap – the *buzz* (i.e. missing out on the buzz feeling) and *impairment expectancies likelihood* both share the fuzzy and dizzy feelings, while the *fun* (i.e. drink so as not to miss out on the fun or feel left out) and *self-perception expectancies likelihood* (i.e. expectancies of being moody, guilty, and self-critical) both share the self-appraisal aspect.

4.6. ALFOMO: Construct Equivalency Across Gender

An important issue in scale development is its equivalence for both males and females. Construct equivalency across gender ensures that the same experience is being evaluated for both men and women. Lack of construct equivalency signifies that the operationalization of the measure differs across gender and results in inaccurate gender comparisons in structural equation models (Baum, Revenson, Singer, 2012). The construct equivalency of the ALFOMO scale across gender was examined through a multi-group analysis following the steps explained in the data analysis (see section 3.4).

The baseline models. The first step in invariance testing is establishing the best fitting baseline model for each group. The model depicted in *Figure 4.3.1* resulted in a very good fit for males, MLMχ^2(123) = 163.603, $p < .001$, RMSEA = .047 (90% CI = .025, .065, p =.591), CFI = .979, TLI = .973, SRMR =.043. Likewise, it provided a very good fit for females, MLMχ^2(123) = 191.248, $p < .001$, RMSEA = .044 (90% CI = .032, .056, p =. 775), CFI = .977, TLI = .972, SRMR =.052. Due to the satisfactory fit for each group, no re-specifications were made.

The configural model. The second step in invariance testing requires constructing the configural model, which combines the two best-fitting baseline models with no equality constraints (i.e. first-order and second-order factor loadings, intercepts, and residual covariances are all freely estimated for each group), thus serving as a benchmark for subsequent models. The configural model resulted in an adequate fit, MLMχ^2(246) = 354.403, $p < .001$, SCF= 1.3609, RMSEA = .045 (90% CI = .034, .055, p =.780), CFI = .978, TLI = .972, SRMR =.049.

Invariance of first-order factor loadings. In testing for the invariance of the first-order factorial structure, equality constraints were imposed on the commonly estimated first-order factor loadings for the two groups. The invariance model resulted in a slightly eroded model fit,

MLMχ^2(266) = 383.107, p < .001, SCF = 1.3513, RMSEA = .045 (90% CI = .035, .055, p =.788), CFI = .976, TLI = .972, SRMR =.056. However, the change in CFI was less than .01 and chi-square difference test was not significant, MLM$\Delta\chi^2$(19) = 27.4971, p >.05. Therefore, it is fair to conclude that the first-order factorial structure of the model operated equivalently across gender.

Invariance of second-order factor loadings. In testing for the invariance of second-order factor loadings, equality constraints were imposed on first- and second-order factor loadings. Constraining the second-order factor loadings resulted in MLMχ^2(270) = 390.490, p < .001, SCF = 1.3463, RMSEA = .045 (90% CI = .035, .055, p =.775), CFI = .975, TLI = .972, SRMR =.075. A comparison of this model with the previous model resulted in a CFI difference that is less than .01 and a non-significant MLM$\Delta\chi^2$(4) = 7.915, p >.05, thereby confirming the invariance of second-order factor loadings across gender.

Invariance of item intercepts. In testing for the equivalence of the intercepts of the observed variables, that latest model where intercepts were freely estimated was compared to a model where intercepts were constrained to be equal across genders. Constraining equal the intercepts resulted in slight deterioration in model fit, MLMχ^2(288) = 425.226, p < .001, SCF = 1.3246, RMSEA = .047 (90% CI = .037, .056, p =.699), CFI = .972, TLI = .970, SRMR =.077. Although the ΔCFI is less than .01, a comparison of nested models resulted in a significant chi-square difference value, MLM$\Delta\chi^2$(18) = 37.5715, p < .01, signaling the presence of non-equivalent intercepts between the two genders.

The modification indices indicated that the intercept for ALFOMO item 5 (i.e. AF5: I get jealous when my friends are having fun drinking without me) was not equivalent across gender, hence the equality constraint was relaxed. Freely estimating AF5 intercept slightly improved the

model fit, MLMχ^2(287) = 416.626, p < .001, SCF = 1.3258, RMSEA = .046 (90% CI = .036, .055, p =.768), CFI = .973, TLI = .972, SRMR =.077. The free estimation of AF5 also resulted in a significant chi-square difference test between the last two nested models, MLM$\Delta\chi^2$(1) = 11.112, p < .001. A review of the standardized estimates showed that the intercepts for males and females were 1.430 (*SE*=.074) and 1.398 (*SE*=.73), respectively.

A subsequent relaxation of intercept constraint was performed on ALFOMO item 16 (i.e. AF16: 10 years from now, I am going to regret not going out and having "crazy" drinking nights with my friends), resulting in a model with MLMχ^2(286) = 409.149, p < .001, SCF = 1.327, RMSEA = .045 (90% CI = .035, .054, p =.820), CFI = .975, TLI = .973, SRMR = .077. A comparison of this model with the previous model resulted in a significant chi-square difference test, MLM$\Delta\chi^2$(1) = 9.3581, p < .001. A review of the standardized estimates showed that the intercepts were 1.422 (*SE*=.070) for males and 1.562 (*SE*=.070) for females.

Invariance of residual covariances. Constraining the three residual covariances to be equal between males and females resulted in a slight increase in the chi-square statistic, MLMχ^2(291) = 413.830, p < .001, SCF = 1.3323, RMSEA = .044 (90% CI = .034, .054, p =.841), CFI = .975, TLI = .978, SRMR =.057. However, a comparison between the last two models resulted in a non-significant chi-square difference test, MLM$\Delta\chi^2$(5) = 5.1462, p > .05, thereby signifying that the three residual covariances are operating equivalently across gender.

Invariance of first-order factor intercepts/means. Testing for mean invariance of the five latent factors showed that the two genders significantly differed in *parties* and *buzz*, with females having a significantly higher fear of missing out on *parties* (M = 0.196, SE = .05, p <.05) and *buzz* (M = .280, SE = .10, p <.05) than males. Although females also had a higher mean on ALFOMO (M =.129), the mean difference was not significant (see Table 4.6.1 for the female

means on the ALFOMO scale and subscales). It is noteworthy to point out that in testing for mean invariance, Mplus requires constraining factor means to zero for one group for model identification purposes. Since the male group served as the reference group in this model, the means for females represent relative, instead of absolute, values.

Table 4.6.1
ALFOMO Scale and Subscales: Females' Means and Standard Errors

	M	*SE*	*p*
Parties	.196	.097	.022
Games	.040	.106	.355
Fun	.037	.102	.359
Anticipated Regret	.105	.108	.166
Buzz	.280	.109	.005
ALFOMO	.129	.107	.231

To sum up, the ALFOMO scale was found to be equivalently operating across gender in terms of the first- and second-order factorial structure. However, a total of four parameters (i.e. two intercepts and two latent means) appeared to be non-invariant across gender.

Chapter 5

Results

5.1. FOMO: The Effects of Perceived Peripherality, Need to belong, and Fear of Social Exclusion

This section of the results focuses on the general experience of FOMO within the social context. Perceived peripherality is expected to be positively associated with FOMO. The positive association between perceived peripherality and FOMO is expected to be further moderated by the need to belong and fear of social exclusion, such that participants with higher need to belong and greater fear of social exclusion should be more likely to experience FOMO than peripheral members with less concern for group belongingness or social exclusion.

SPSS t-test showed that gender acted as a confound through significantly predicting perceived peripherality, need to belong, fear of social exclusion, FOMO, and social media use (see Table 5.1.1). Females reported less perceived peripherality (i.e. more perceived group centrality), higher need to belong, more fear of social exclusion, more social media use, and generally more FOMO than males.

Table 5.1.1
Means and Standard Deviations in Perceived Peripherality, Need to Belong, Fear of Social Exclusion, and FOMO by Gender

	Gender					
	Males (n = 154)		Females (n = 308)			
	M	SD	M	SD	t	df
1. Perceived peripherality	2.434	1.211	2.112	1.012	2.913*	406
2. Need to belong	4.083	1.040	4.493	1.003	-4.092***	415
3. Fear of social exclusion	3.456	1.789	3.852	1.816	-2.214*	405
4. Social Media Use	4.321	1.755	4.967	1.490	-3.695***	366
5. FOMO	3.251	1.248	3.646	1.227	-3.419***	459

Notes. * = $p \leq .05$, ***= $p \leq .01$. Cases were deleted liswise.

The correlation matrix (see Table 5.1.2) confirmed that gender is significantly related to all of the variables in this section. Moreover, perceived peripherality was not significantly related to FOMO, but was strongly correlated with the need to belong, fear of social exclusion, and

social media use. The linear regression analysis substantiated these findings; FOMO was significantly predicted by the need to belong (B = .545, p < .001), fear of social exclusion (B = .189, p <.001), and social media use (B =.162, p <.001). Perceived peripherality failed to significantly predict FOMO (B = .007, p >.05).

Table 5.1.2
Correlation Matrix of Gender, Perceived Peripherality, Need to Belong, Fear of Social Exclusion, Social Media Use, & FOMO

Variable	1	2	3	4	5	6
1. Male	__					
2. Perceived Peripherality	-.139**	__				
3. Need to belong	.188**	-.167**	__			
4. Fear of social exclusion	.103*	.067	.528**	__		
5. Social Media Use	-.190**	-.146**	.371**	.193**	__	
6. FOMO	-.149**	-.077	.653**	.482**	.389**	__

**Correlation is significant at the 0.01 level (2-tailed), *. Correlation is significant at the 0.05 level (2-tailed)

Confirming the significant contribution of the need to belong and fear of social exclusion to the experience of FOMO, the next step was to test the proposed moderation effects of these two variables on the relationship between perceived peripherality and FOMO. Given the aforementioned evidence of gender differences in the model variables, gender was statistically controlled for in the model. The sample was also weighted by gender to correct for any bias that might be caused by the relatively larger female sample size. After the measurement model was estimated, structural paths were added and re-specified as necessary, resulting in the model shown in *Figure 5.1.1*. The depicted models provided an acceptable fit, MLMχ^2(788) = 1461.584, p < .001, SCF = 1.2039, RMSEA = .049 (90% CI = .045, .052, p =.731), CFI = .929, TLI = .922, SRMR =.085. As can be seen in the model, females reported higher need to belong, more social media use, and less perceived peripherality. The need to belong emerged as the best predictor of FOMO. Perceived peripherality was not directly associated with FOMO. Moreover, fear of social exclusion failed to significantly predict FOMO (p >.05). The total variance explained in FOMO approximated 60%.

Mediation analysis, using the bootstrapped 95% confidence intervals, indicated that the only significant indirect effects were the effect of gender (i.e. female) on FOMO via the need to belong, *B* = .131, *SE*=.034, *p* <.001, [95% CI =.064, .196] and via social media use, *B* = .032, *SE*=.014, *p* <.05, [95% CI =.011, .067].

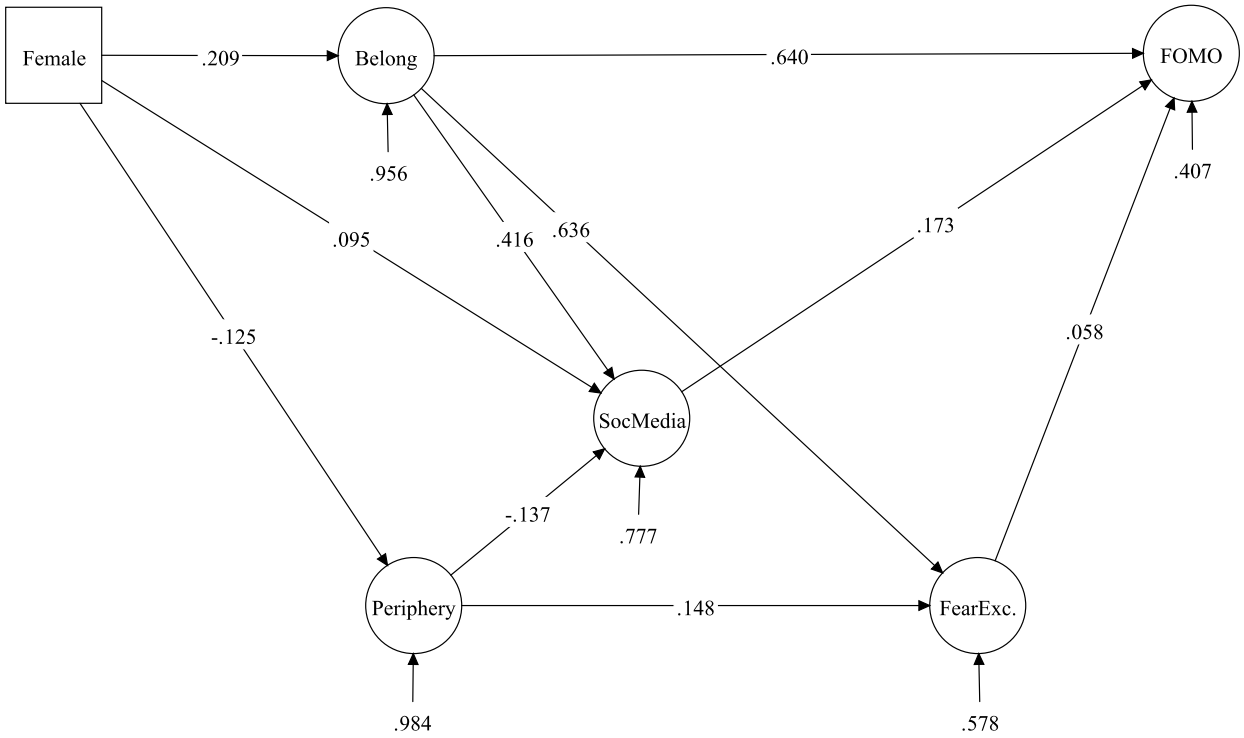

Figure 5.1.1. Effects of Perceived Peripherality, Social Media Use, Need to Belong, Fear of Social Exclusion on FOMO (N = 363; cases were deleted listwise).

Having established the best-fitting SEM model, the next step was to test for the moderating effects of the need to belong and fear of social exclusion on the relationship between perceived peripherality and FOMO. Two interaction terms (i.e. *PERxBELO* = perceived peripherality*need to belong and *PERxFEAR* = perceived peripherality*fear of social exclusion) were created using the XWITH command and were added to the previous model. The interaction between perceived peripherality and need to belong did not significantly predict FOMO. The interaction between perceived peripherality and fear of social exclusion was, in contrast,

significant in predicting FOMO. However, as can be seen in *Figure 5.1.2 and Figure 5.1.3*, the effect of the interaction is very small, $B = .070$, $p < .05$. A log-likelihood difference test, corrected for MLM estimation resulted in $D = 3.82$, which is slightly less than the critical value (3.84) for $p = .05$, thus signifying the trivial contribution of the interaction term to the model fit.

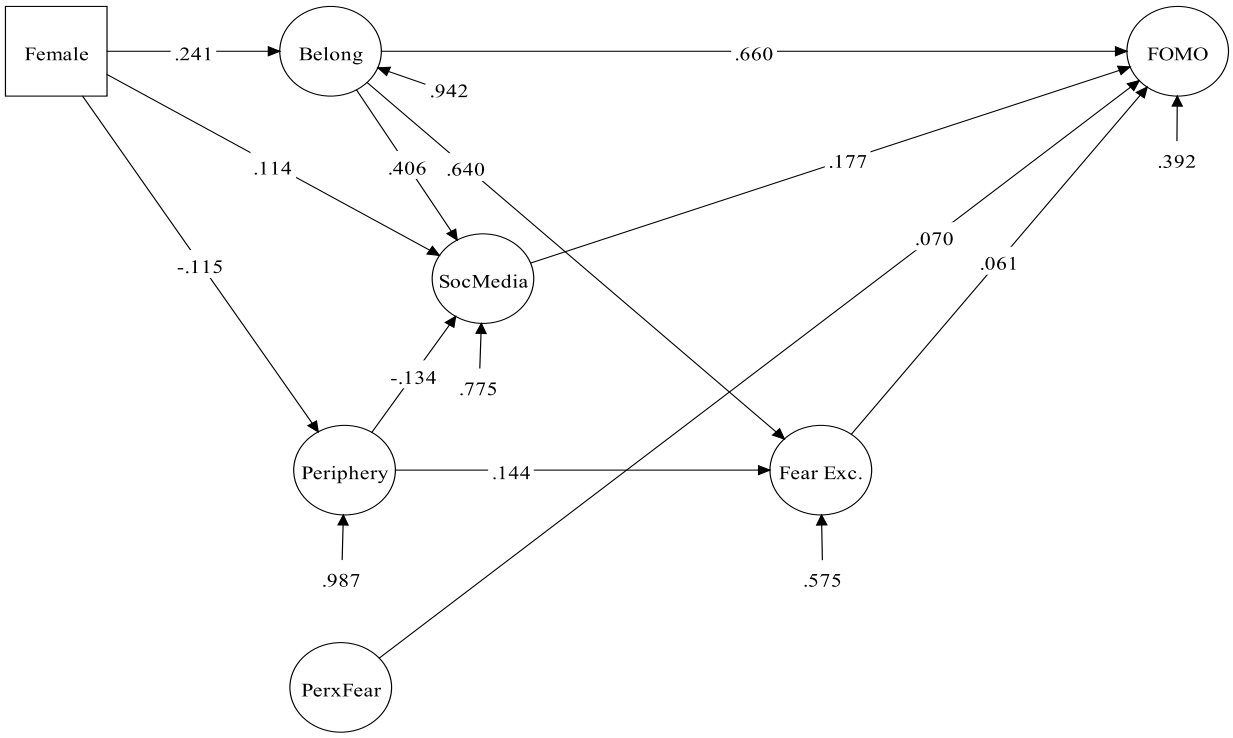

Figure 5.1.2. The Effect of the Interaction Between Perceived Peripherality & Fear of Fear of Social Exclusion on FOMO (N = 462).

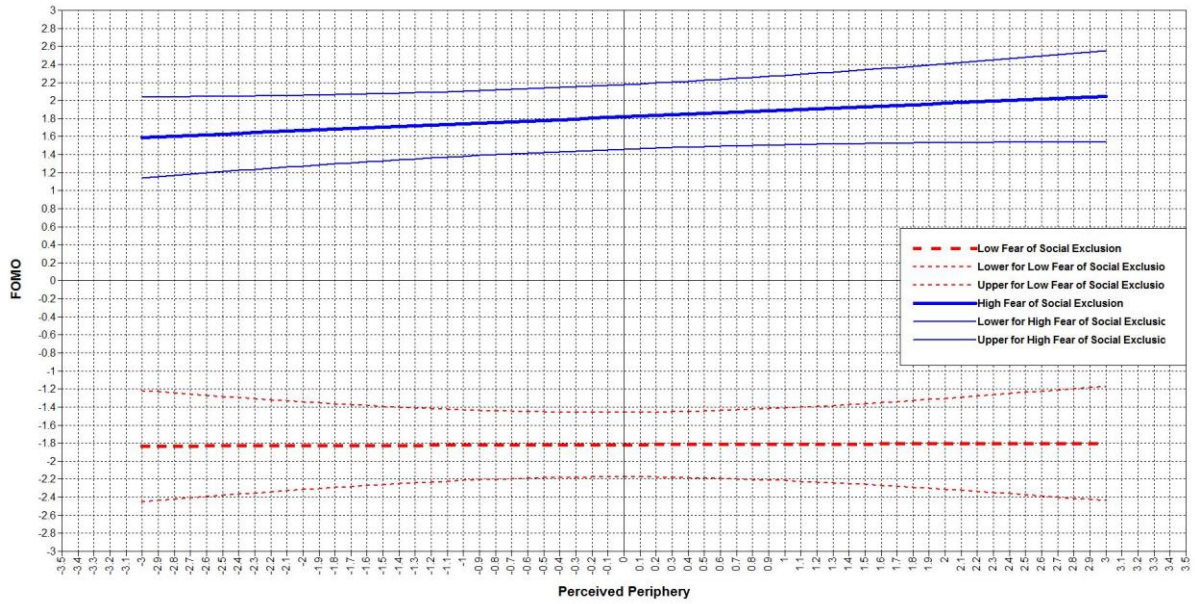

Figure 5.1.3. The Zero Moderating Effect of Fear of Social Exclusion on The Relationship Between Perceived Peripherality and FOMO.

The interaction terms and fear of social exclusion, which failed to predict FOMO, were subsequently eliminated and the model was re-estimated, resulting in an acceptable fit, MLMχ^2(673) = 1258.854, p < .001, SCF = 1.2174, RMSEA = .049 (90% CI = .045, .053, p =.653), CFI = .930, TLI = .923, SRMR =.087 (See *Figure 5.1.4*).

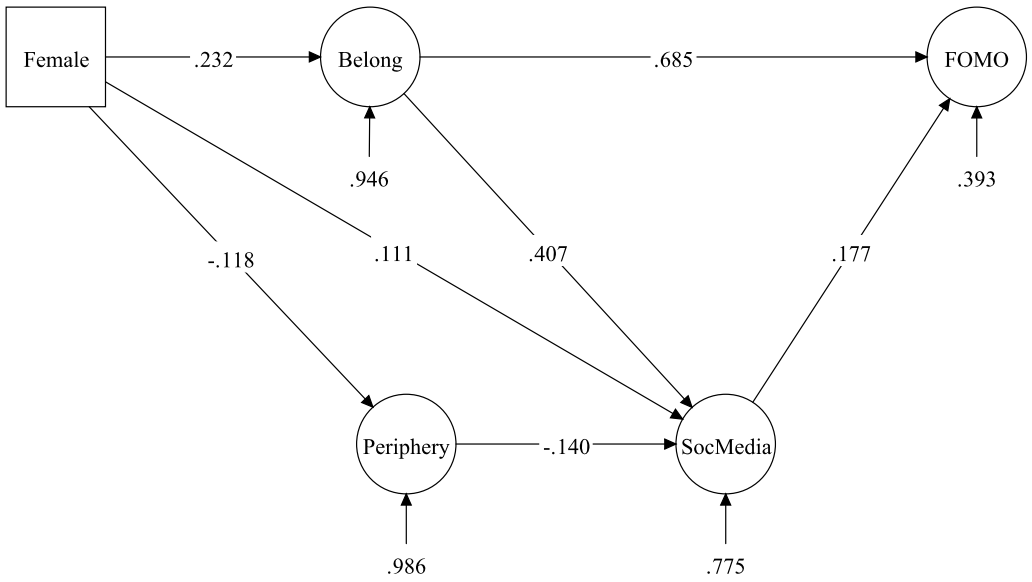

Figure 5.1.4. The Trimmed Model of Perceived Peripherality, Need to Belong, Social Media Use on FOMO.

5.2. ALFOMO: The Effects of FOMO, Social Identification, Self-Relevance, Attitudes, & Social Image

Alcohol-related FOMO was predicted to result from five interrelated antecedents, namely, the general *FOMO*, *college perceptions*, *social-identification* with heavy drinkers, *self-relevance* of alcohol, and *attitudes* towards alcohol consumption and *social image* of alcohol consumers. Regression analysis was used to test the unique effects of the antecedent factors. With the exception of college perceptions, all of the proposed antecedent variables significantly and positively predicted ALFOMO. FOMO was the best predictor of ALFOMO, $B = .321$, $t(5, 411) = 9.00$, $p < .001$, followed by social image, $B = .237$, $t(5, 411) = 5.981$, $p < .001$, attitudes, $B = .237$, $t(5, 411) = 4.703$, $p < .001$, and social identification, $B = .188$, $t(5, 411) = 4.380$, $p < .001$. Those variables explained more than half of the variance in ALFOMO, adjusted $R^2 = .571$, $F(5, 411) = 112.125$, $p < .001$.

Further analysis suggested that the null effect of *college perceptions* on ALFOMO was due to a suppression effect caused by the overlap between *college perceptions* and *attitudes* ($r = .583$, $p < .001$). The presence of a suppression effect was suspected due to the fact that the significant moderate correlation between the *college perceptions* and *ALFOMO* ($r = .429$, $p < .01$) was reduced to zero in the regression equation. Removing *attitudes* from the regression equation resulted in a significant, yet very small, effect ($B = .079$, $p < .05$). Therefore, it is fair to conclude that college perceptions are less relevant to ALFOMO than attitudes.

5.3. ALFOMO, Alcohol Positive Expectancies, and Binge Drinking Intentions

Positive expectancies were assessed at two dimensions: *likelihood* and *evaluation*. It was hypothesized that *positive expectancies likelihood* would be positively and directly associated with binge drinking intentions. Furthermore, an indirect path was expected to link the alcohol

expectancies likelihood and binge drinking intentions through ALFOMO. Evaluation of expectancies (i.e. the extent of their favorability) was hypothesized to moderate the effect of positive expectancies likelihood on binge drinking intentions, such that the higher the evaluations (i.e. the more favorable they are perceived to be), the stronger the relationship between positive expectancies likelihood and binge drinking intentions. Moreover, positive expectancies evaluations were hypothesized to moderate the relationship between positive expectancies likelihood and ALFOMO, making the positive association between the two stronger under higher valuations. These hypotheses were partially supported.

The hypotheses were tested using the general positive expectancy scale, where all of the fourteen items were modeled as first-order indicators of the likelihood and evaluation latent factors (see *Figure 3.3.1.* in Chapter 3 for the CFA model of positive expectancies). First, the mediation model was tested and paths were re-specified as necessary. Second, the interaction terms were added to the model and tested for significance using the log-likelihood ratio test.

The mediation model resulted in an acceptable fit, MLM$\chi^2(1642) = 2478.285$, $p < .001$, SCF = 1.1005, RMSEA = .043 (90% CI = .039, .046, p =1.000), CFI = .929, TLI = .924, SRMR =.070. Although positive expectancies likelihood was not directly linked with binge drinking intentions, it predicted binge drinking intentions via indirect paths (see *Figure 5.3.1*). ALFOMO, as predicted, significantly mediated the effects of positive expectancies likelihood on binge drinking willingness, *B* = .187, *SE* = .045, *p* <.001, [95%CI = .112, .297]. Additionally, positive expectancies likelihood increased binge drinking likelihood through the serial mediation of ALFOMO and willingness to binge drink, *B* = .103, *SE* = .038, *p* <.01, [95%CI =.051, .214][13].

[13] The 95% bootstrap confidence interval for the standardized indirect effects were estimated using 2000 bootstrapped samples and can be only obtained with ML estimator, thus, the mediation model was re-estimated using ML.

Participants who held more positive expectancies of alcohol experienced greater alcohol-related FOMO, and subsequently, had more intentions to binge drink. ALFOMO also mediated the effect of past heavy drinking on binge drinking willingness, B = .140, SE = .038, p <.001, [95%CI = .073, .226]. Moreover, past heavy drinking also slightly increased binge drinking likelihood through the serial mediation of ALFOMO and binge drinking willingness, B = .081, SE = .029, p <.01, [95%CI = .038, .153].

A significant positive path from positive expectancies evaluation to willingness to binge drink, which was not specified in the proposed hypotheses, was added to the model. Re-running this model on the imputed dataset resulted in a similarly good fit, MLM $\chi^2(1596) = 2081.451$, RMSEA = .035, CFI = .930, TLI = .925, SRMR =.066 and the same paths were maintained[14].

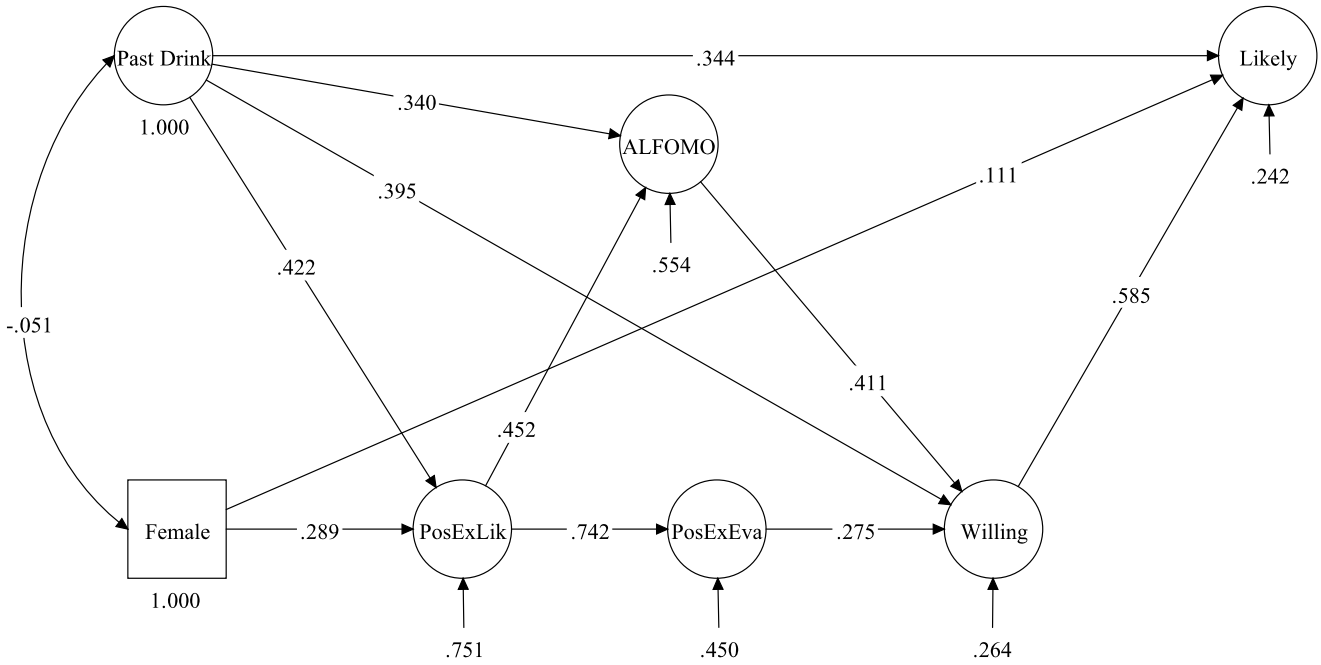

Figure 5.3.1. ALFOMO, Positive Expectancies, and Binge Drinking Mediation Model

[14] Mplus does not allow for testing indirect effects with imputed data.

In testing for the moderation effect of alcohol expectancies evaluations, an interaction term (i.e. LikXEva = positive expectancies likelihood * positive expectancies evaluations) was computed, using the XWITH command, and added to the last model (see *Figure 5.3.1*) to predict ALFOMO and binge drinking intentions.

The interaction effect was significant in positively predicting ALFOMO (*B* = .104, *SE*= .037, *p* <.01, [95%CI = .031, .177]) and binge drinking willingness (*B* = .077, *SE*= .037, *p* <.01, [95%CI = .004, .150]), but not binge drinking likelihood (see *Figure 5.3.2*). Given the small effect size from the interaction term on willingness, the path was eliminated and the model was re-estimated. The significant path linking the interaction term to ALFOMO remained significant, *B* = .110, *SE*= .037, *p* <.01, [95%CI = .037, .183]. The log-likelihood ratio test was significant, D = 1179,550, at *p* <.01, indicating that the interaction terms significantly improved the model fit (see *Figure 5.3.2*). A graph of the interaction effect is presented in *Figures 5.3.3.* As illustrated in the graphs, the positive associations between positive expectancies likelihood and ALFOMO becomes stronger under high positive expectancies evaluation.

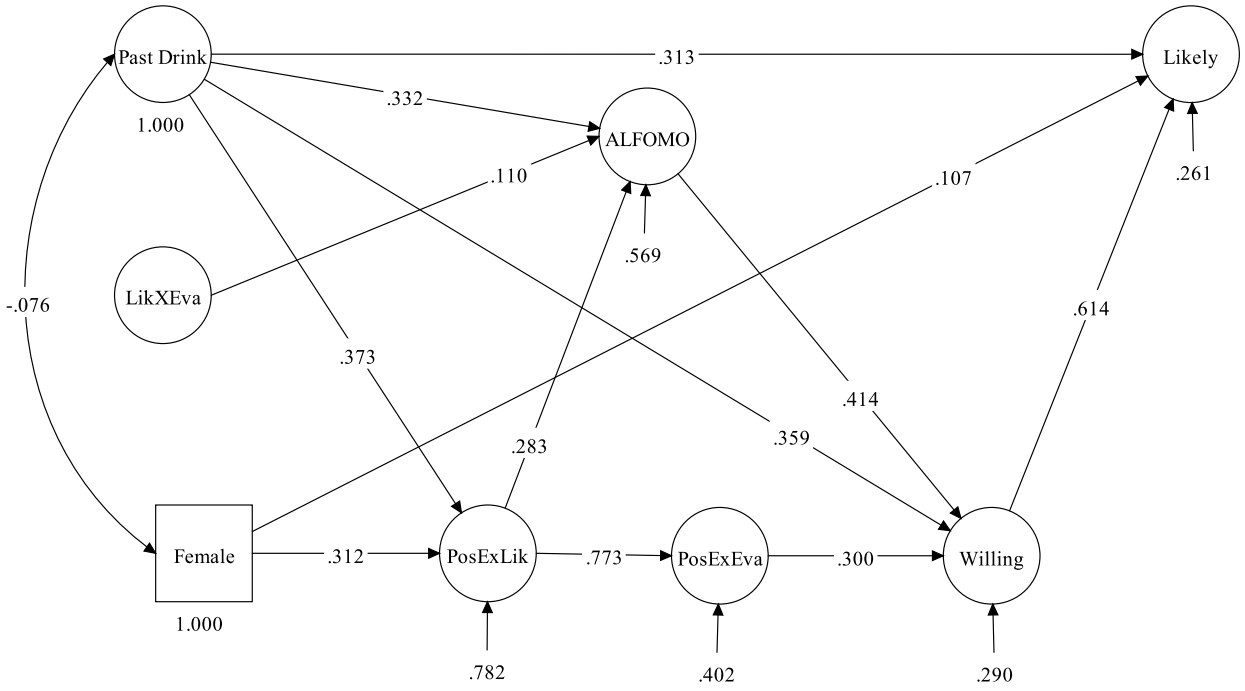

Figure 5.3.2. ALFOMO, Positive Expectancies, and Binge Drinking Model with LikXEva Interaction

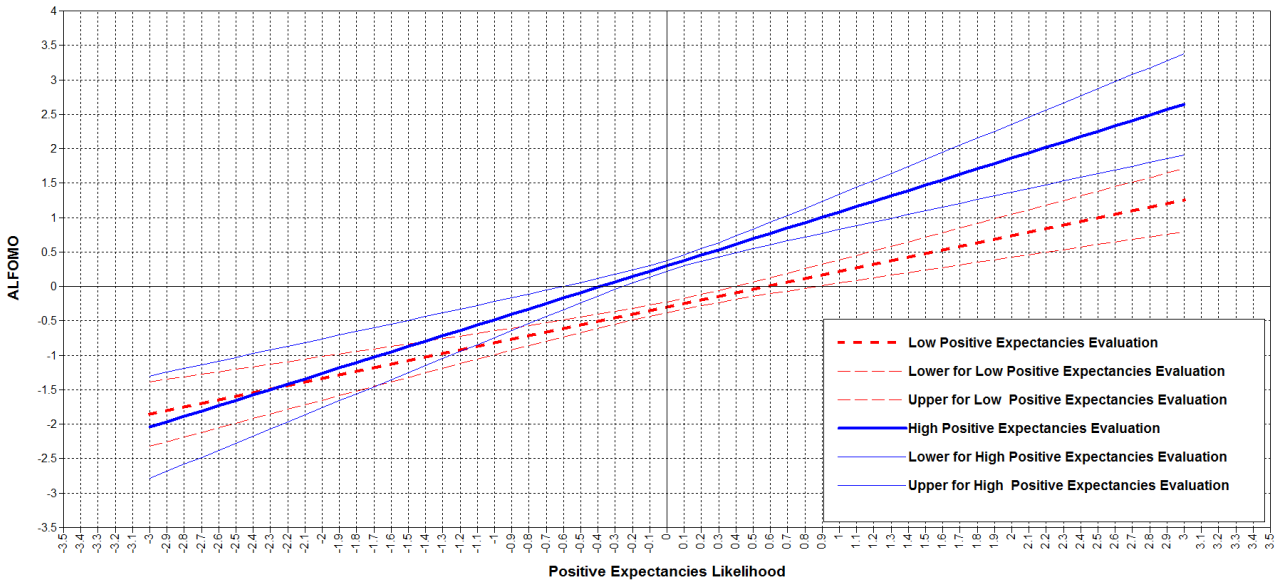

Figure 5.3.3. The Moderating Effect of Positive Expectancies Evaluations on The Relationship Between Positive Expectancies Likelihood and ALFOMO

Subsequent analyses focusing on each of the four positive expectancy subscales (i.e. sociability, tension reduction, courage, & sexuality) were conducted (see Appendix A for these analyses).

5.4. ALFOMO, Alcohol Negative Expectancies, and Binge Drinking Intentions

ALFOMO was hypothesized to decrease *negative expectancies perceived likelihood* as well as their *subjective evaluation*[15]. In other words, individuals with high ALFOMO were predicted to rate negative expectancies as less likely to occur and evaluate them as less severe, resulting in greater intentions to binge drink. These hypotheses were partially supported.

The hypotheses were first tested using the general negative expectancy scale, where all of the eight negative expectancy items were modeled as first-order indicators of the likelihood and evaluation latent factors (see *Figure 3.3.3.* in Chapter 3 for the CFA model of alcohol negative

[15] Negative expectancies evaluations have been recoded so higher scores reflect severity of negative expectancies (i.e. "bad" instead of "good" valuations).

expectancies). Modeling the effect of alcohol negative expectancies in mediating the relationship between ALFOMO and drinking intentions revealed that, contrary to our predictions, ALFOMO slightly increased the perceived likelihood of negative expectancies (*B* = .124, *SE*= .058, *p* < .05), which, in turn, failed to significantly predict binge drinking behavioral intentions. Therefore, negative expectancies likelihood was eliminated from the model. ALFOMO did, as predicted, decrease the evaluations of negative expectancies, making them less severe (*B* = -.147, *SE*= .071, *p* < .001). Perceived severity of negative expectancies significantly reduced binge drinking willingness.

Although the indirect effects of ALFOMO via negative expectancies evaluations had significant *p*-values on willingness, *B* = .036, *SE* =. 021, *p* < .05, the 95% confidence intervals straddled zero, indicating a non-significant mediation. The indirect effect from past drinking on binge drinking willingness through the perceived negative expectancies severity was significant, *B* = .063, *SE* = .026, *p* <.05, [95% CI = .013, .114]. This model provided a satisfactory fit, MLMχ^2(820) = 1207.225, *p* < .001, SCF = 1.1793, RMSEA = .041 (90% CI = .036, .046, *p* =.999), CFI = .950, TLI = .945, SRMR =.071.

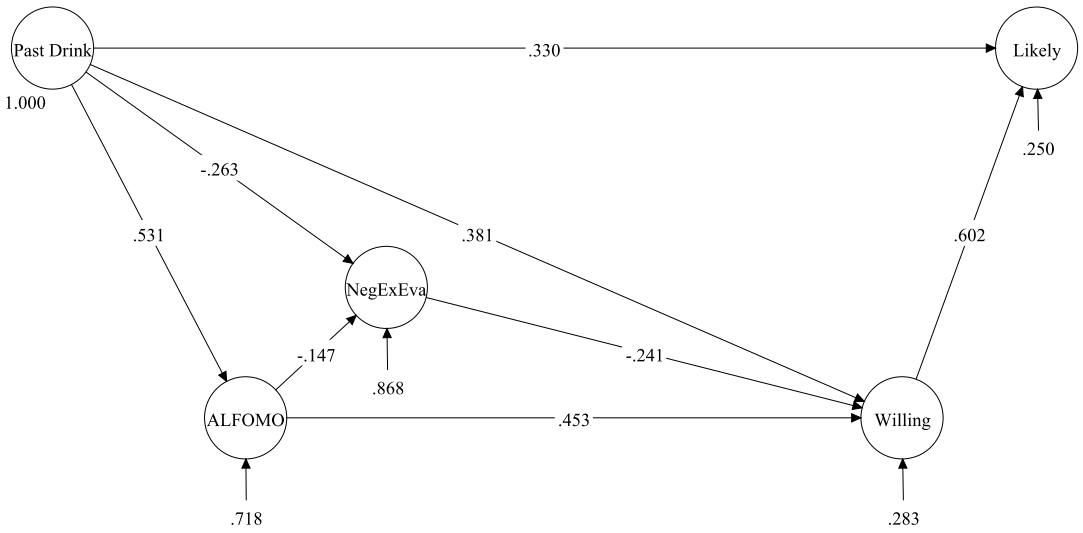

Figure 5.4.1. ALFOMO, Alcohol Negative Expectancies, and Binge Drinking Intentions Model Based on Non-Imputed Data (N =285)

Re-running the same model on the imputed dataset reduced some of the previously confirmed relationships to zero. Most importantly, the effect of ALFOMO on negative expectancies evaluations was reduced to non-significance. In the imputed-dataset-based model, negative expectancies likelihood significantly predicted willingness to drink. Further analysis suggested some gender differences. Therefore, a multi-group analysis was conducted using the same procedures previously explained for the multi-group analysis (see section 3.4).

Table 5.4.1 shows the sequential invariance tests between males and females. In total, gender differences were evident in two factor loadings (i.e. Past Drinking by Drink7 & Willing by Willing1), one residual covariances (i.e. Drink7 with Drink4), five intercept (i.e. Negative Expectancies Likelihood L15, Willing1, AF5, AF16, & Drink1), and two latent means (i.e. Negative Expectancies Likelihood and Behavioral Intentions Likelihood).

After testing the invariance of the measurement model, structural paths were examined across gender, yielding two models (see *Figures 5.4.2* & *5.4.3*) with adequate fit, except for the TLI and SRMR, MLMχ^2(2072) = 2995.616, $p < .001$, RMSEA = .055 (90% CI = .050, .059, p =.036), CFI = .906, TLI = .902, SRMR =.146.

In line with our predictions, alcohol-related FOMO (i.e. ALFOMO) decreased negative expectancies evaluations (i.e. severity) and those evaluations significantly decreased binge drinking willingness among males and females. But, as can be seen in the figures, the negative association between negative expectancies evaluations and binge drinking willingness is smaller among females.

However, ALFOMO increased the perceived likelihood of negative expectancies among both males and females. The likelihood of negative expectancies was slightly associated with more binge drinking intentions among males but were non-significant in predicting those

intentions among females. Another notable difference in the models is that past drinking reduced negative expectancies likelihood only among female participants.

Table 5.4.1

Negative Expectancies: A Multi-Group Analysis of Invariance

Model		MLMχ^2	df	SCF	RM	CFI	TLI	SR	MLM$\Delta\chi^2$	df	p.	Std Est. (SE)
Baseline Models	Male	1448.614	983		.067	.888	.876	.097				
	Female	1359.816	994		.044	.935	.930	.075				
Configuaral Model		2801.002	1971	1.0880	.053	.915	.907	.085				
Factor Loading Invariance		2922.042	2018	1.0919	.055	.908	.901	.107	113.9730	47	<.01	
	Relaxed Eq. Cons.:											
	1. Willing by Willing1	2911.983	2017	1.0915	.055	.909	.902	1.05	6.3982	1	<.01	M=.747(.025) F= .771 (.023)
	2. Past Drink by Dink7	2903.439	2016	1.0912	.054	.910	.903	.104	6.0112	1	<.01	M=.694 (.036) F= .570 (.062)
Residual Covariance Invariance		2956.362	2028	1.0940	.056	.905	.899	.118	42.2062	12	<.01	
	Relaxed Eq. Cons.:											
	1. Drink7 with Drink4	2947.762	2027	1.0931	.055	.906	.900	.122	8.600	1	<.05	M = -.359 (.103) F = .332 (.095)
Intercepts Invariance		3037.948	2074	1.0911	.056	.902	.898	.126	92.0604	47	<.05	
	Relaxed Eq. Cons.:											
	1. L15 (Neg.Ex.Lik. 15)	3024.698	2073	1.0911	.056	.903	.899	.125	13.2500	1	<.05	M = 3.626 (.161) F = 3.947 (.181)
	2. Willing1	3017.614	2072	1.0911	.055	.904	.899	.125	7.0840	1	<.05	M = 1.149 (.053) F =1.557 (.057)
	3. AF5 (ALFOMO 5)	3011.189	2071	1.0912	.055	.904	.900	.125	7.5896	1	<.05	M = 1.430 (.062) F =1.381 (.052)
	4. AF16 (ALFOMO 16)	3004.383	2070	1.0912	.055	.905	.901	.125	6.8060	1	<.05	M = 1.321 (.062) F =1.619 (.068)
	5. Drink1	3000.485	2069	1.0913	.055	.905	.901	.125	4.4707	1	<.05	M = .873 (.055) F =.730 (.029)
Means Invariance (all means freely estimated)		2944.996	2058	1.0912	.054	.910	.905	.092	54.8191	11	<.05	
	Relaxed Eq. Cons.:											
	1. NegExpLik. (NEL) 2. Likely (Beh. Int.)	2975.028	2066	1.0913	.054	.907	.903	.130	29.6040	8	<.05	NEL: F =.323 (.126), p<.01 Likely: F =.286 (.094), p<.01

Note. SCF = Scaling Correction Factor, RM. = RMSEA, SR. = SRMR, Std Est (SE) = standardized estimates (standard error), M = Male's Mean, F = Female's Mean.

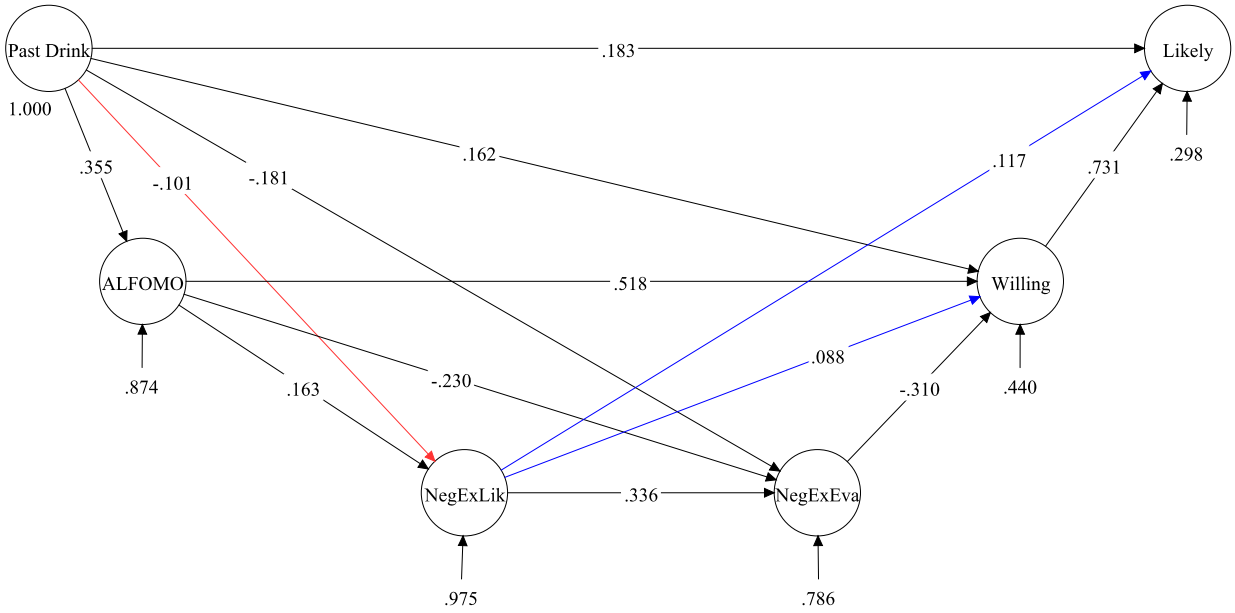

Figure 5.4.2. ALFOMO, Alcohol Negative Expectancies, & Binge Drinking Intentions (Males, N =105).
Note. Blue lines represent paths that are significant only among males. Red lines represent paths that are significant only among females.

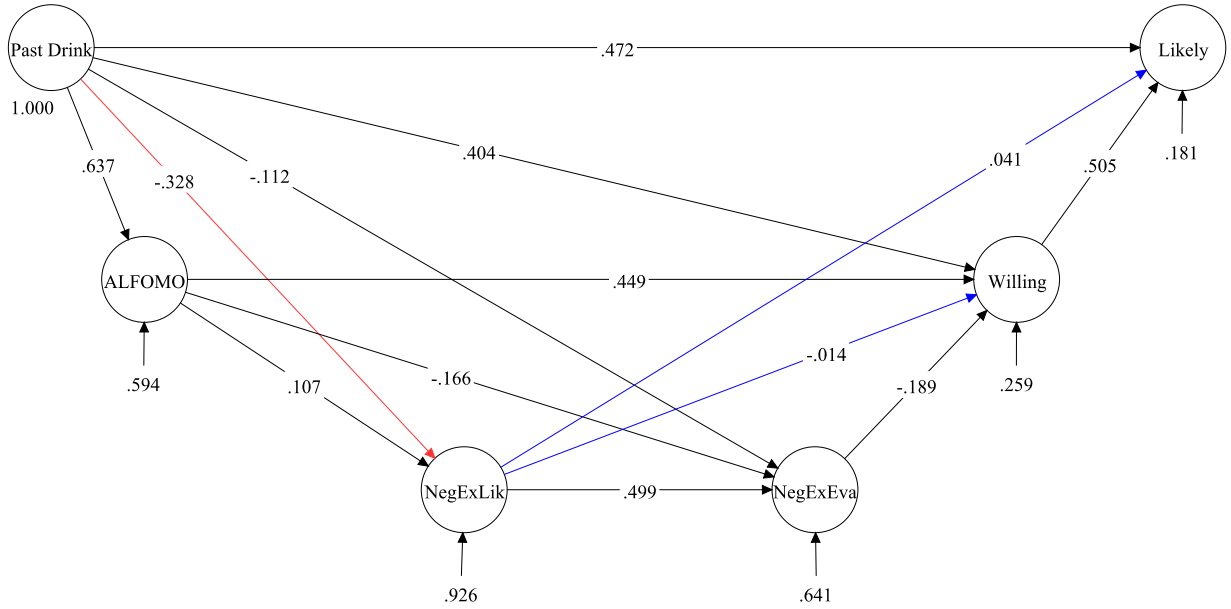

Figure 5.4.3. ALFOMO, Alcohol Negative Expectancies, & Binge Drinking Intentions (Females; N =192).
Note. Blue lines represent paths that are significant only among males. Red lines represent paths that are significant only among females.

Further analyses of the impact of ALFOMO on each of the negative expectancies sub-scales were conducted to check for any differential effects (see Appendix B). Another set of

analyses focused on the simultaneous modeling of alcohol positive and negative expectancies in relation to ALFOMO and binge drinking intentions (see Appendix C).

ALFOMO, Alcohol Negative Expectancies, and Binge Drinking beliefs & Intentions. Binge drinking beliefs are the three two-item-scales that reflect perceived risk of binge drinking, familiarity with the binge drinking risks, and perceived control over binge drinking risks. To examine how these beliefs influence the relationships between ALFOMO, negative expectancies, and binge drinking intentions, the three scales were added to the models shown in *Figure 5.4.2* and *Figure 5.4.3* and paths were re-specified as necessary. The multi-group analysis (see Table 5.4.2 for the sequential steps taken to test group invariance at the various levels) resulted in two models, MLMχ^2(2638) = 3859.750, $p < .001$, RMSEA = .057 (90% CI = .053, .060, p =.003), CFI = .893, TLI = .88, SRMR =.093 (see *Figure 5.4.4* & *Figure 5.4.5*; blue lines represent paths that are significant only among males and red lines represent paths that are significant only among females).

As can be seen in the figures, even after controlling for binge drinking beliefs, ALFOMO still maintained its significant and direct impact on increasing negative expectancies likelihood among males and females, such that male and female participants who experienced relatively greater alcohol-related FOMO also believed that alcohol negative expectancies were more likely than those with relatively less alcohol-related FOMO. Additionally, ALFOMO reduced the severity of negative expectancies, but only among males. Moreover, the severity of negative expectancies was only slightly associated with less willingness to binge drink, among both males and females.

Perceived risk of binge drinking significantly increased the severity of negative expectancies among males and females. It also decreased willingness to binge drink, most

notably among males. Familiarity with the binge drinking risks increased perceived control of perceived binge drinking risks. Perceived control over binge drinking risks significantly reduced the likelihood and severity of negative expectancies and was associated with greater willingness to binge drink among males and females.

Table 5.4.2

Negative Expectancies & Binge Drinking Beliefs: A Multi-Group Analysis of Invariance

Model		MLMχ^2	df	SCF	RM	CFI	TLI	SR	MLMΔ	df	*p*	Std Est. (SE)
Baseline	Male	1977.728	1269	1.0271	.074	.854	.841	.100				
Models	Female	1741.573	1272	1.0673	.044	.928	.922	.075				
Configuaral Model		3744.013	2519	1.0483	.058	.892	.882	.093				
Factor Loading Invariance		3803.134	2571	1.0503	.058	.892	.884	.104	116.3685	52	<.01	
	Relaxed Eq. Cons.:											
	1. Willing by Willing1	3793.158	2570	1.0498	.057	.893	.885	.102	19.4233	1	<.01	M=.748 (*.020*), F= .770 (*.023*)
	2. Past Drink by Drink7	3785.034	2569	1.0497	.057	.893	.885	.100	18.9543	1	<.01	M=.667 (*.029*), F= .571 (*.060*)
	3. Games by AF11	3776.921	2568	1.0494	.057	.894	.886	.100	5.3015	1	<.05	M=.745 (*.028*), F= .865 (*.016*)
	4. Ant.Regret by AF16	3768.133	2567	1.0494	.057	.894	.887	.100	8.7880	1	<.01	M=.801 (*.029*), F= .929 (*.014*)
	5. NegExLik by L15	3759.469	2566	1.0496	.057	.895	.887	.098	15.5541	1	<.01	M=.838 (*.029*), F= .677 (*.037*)
	6. Parties by AF18	3751.364	2565	1.0498	.057	.896	.888	.098	14.4553	1	<.01	M=.236 (*.040*), F= .450 (*.034*)
Residual Covariance Invariance		3740.282	2572	1.0506	.056	.897	.890	.113	-12.6823	7	>.05	
	Relaxed Eq. Cons.:											
	1. Drink3 with Drink1	3732.249	2571	1.0504	.056	.898	.891	.111	5.8701	1	<.05	M=.656 (*.043*), F= .356 (*.065*)
Intercepts Invariance		3829.631	2624	1.0495	.056	.894	.889	.115	98.2693	53	<.01	
	Relaxed Eq. Cons.:											
	1. E15 (Neg.Ex.Lik.15)	3819.976	2623	1.0495	.056	.895	.889	.115	9.6550	1	<.01	M=3.37 (*.147*), F= 4.23(*.253*)
	2. Willing1	3813.118	2622	1.0495	.056	.895	.890	.115	6.580	1	<.05	M = 1.15 (*.052*), F =1.56 (*.057*)
	3. AF5 (ALFOMO 5)	3806.830	2621	1.0495	.056	.896	.890	.114	6.2880	1	<.05	M = 1.43 (*.062*), F =1.39 (*.054*)
	4. AF16 (ALFOMO 16)	3798.547	2620	1.0495	.056	.896	.891	.114	8.2830	1	<.01	M = 1.44 (*.072*), F = 1.56 (*.065*)
	5. E26R (Neg.Ex.Eva26R)	3793.877	2619	1.0495	.056	.897	.891	.114	4.6700	1	<.05	M = 4.53 (*.161*), F = 4.27 (*.187*)
	6. Familiarity1	3788.712	2618	1.0496	.056	.897	.892	.114	6.4007	1	<.05	M = 2.81 (*.174*), F =3.60 (*.197*)
	7.Drink1	3784.148	2617	1.0496	.056	.897	.892	.114	45640	1	<.05	M = .865 (*.056*), F =.745 (*.030*)
Means Invariance (all means freely estimated)		3731.105	2601	1.0495	.055	.901	.895	.088				
	Sig. Different Means:											
	1. Neg.Ex.Lik.											Neg.Ex.Lik:F =.334 (*.136*), *p*<.05
	2. Willing											Willing: F =.168 (*.098*), *p*<.05
	3. Likely (Beh. Int.)											Likely: F =.319 (*.096*), *p*<.05

Note. SCF = Scaling Correction Factor, RM. = RMSEA, SR. = SRMR, Std Est (SE) = standardized estimates (standard error), M = Male's Mean, F = Female's Mean.

Table 20

Peer Descriptive Norms: Multi-Group Analysis of Invariance

Model		MLMχ^2	df	SCF	RMS	CFI	TLI	SR	ML	df	p	Std Est. (SE)
Baseline	Male	806.466	524	1.1851	.074	.907	.894	.095				

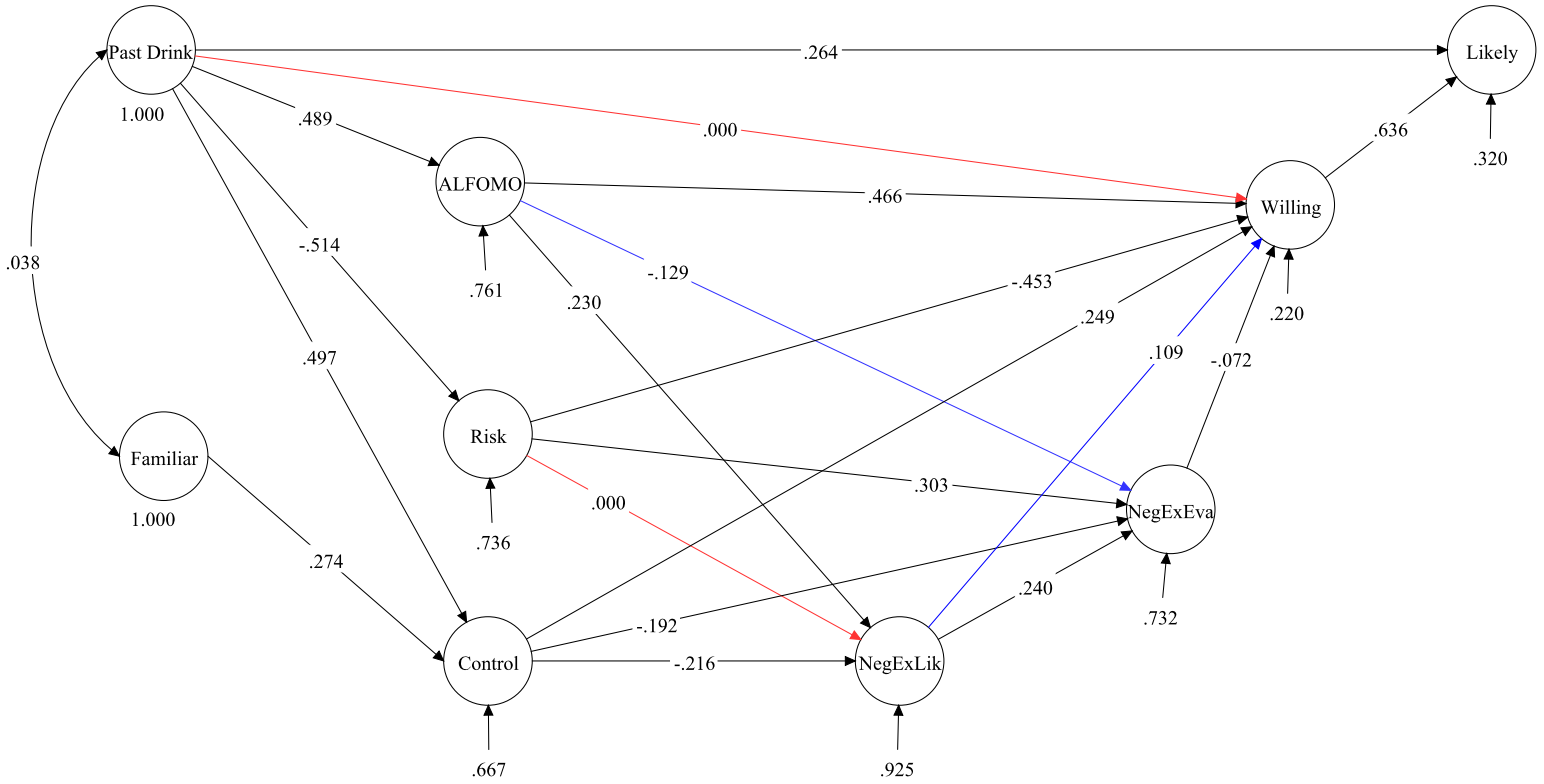

Figure 5.4.4. ALFOMO, Binge Drinking Beliefs, Negative Expectancies, & Drinking Intentions (Males, N = 102)

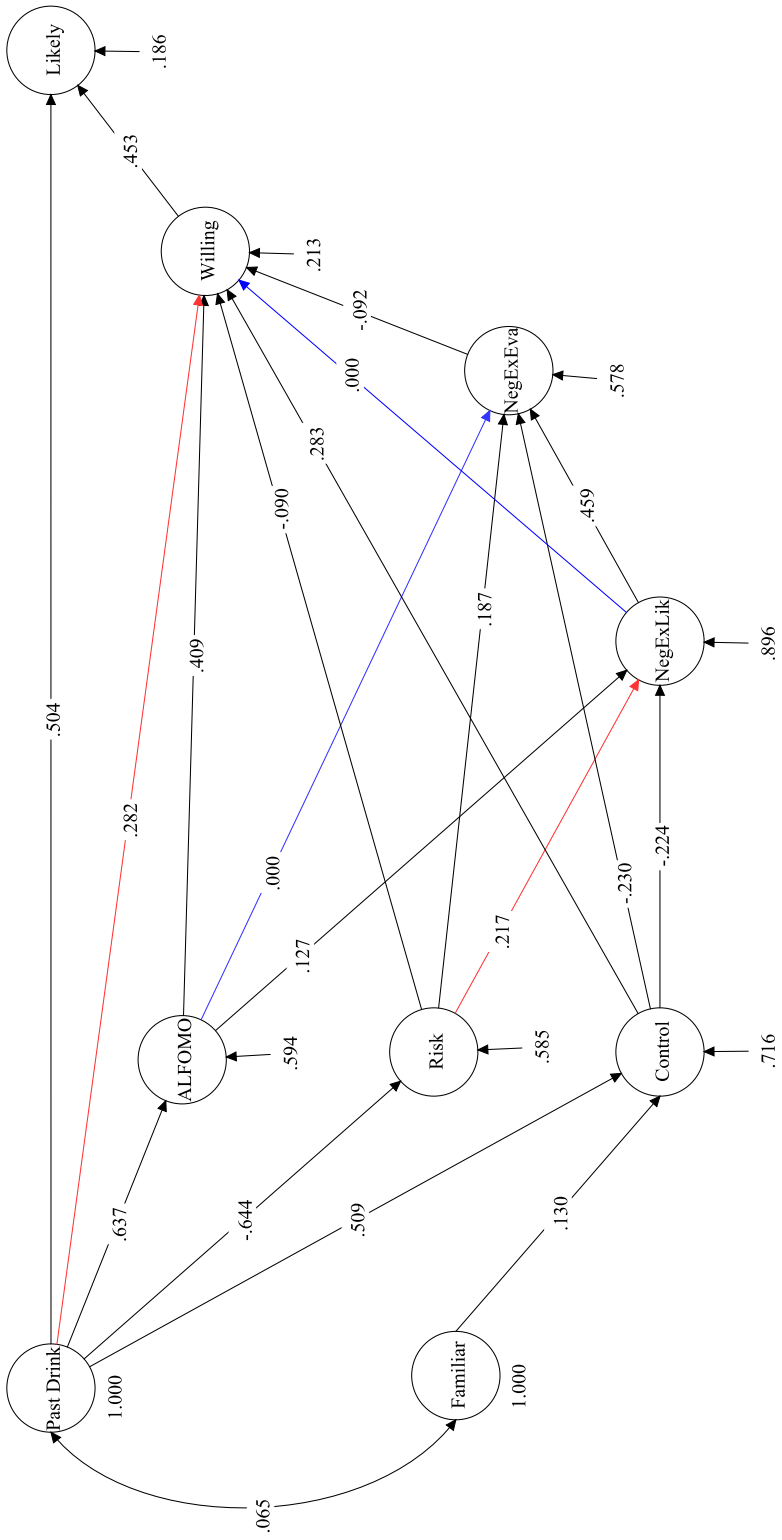

Figure 5.4.5. ALFOMO, Binge Drinking Beliefs, Negative Expectancies, & Drinking Intentions (Females; N =187)

ALFOMO and Negative Expectancies: An Alternative Model. An alternative model of ALFOMO and negative expectancies was tested. In this model, negative expectancies were predicted to operate in the same way as positive expectancies. That is, negative expectancies likelihood and evaluation (i.e. severity) were predicted to decrease ALFOMO. The severity of negative expectancies was predicted to moderate the negative association between negative expectancies likelihood and ALFOMO. The more severe the ratings of negative expectancies, the stronger the negative association between negative expectancies likelihood and ALFOMO. Another difference with this model is the inclusion of gender as a statistical control instead of the gender-based multi-group analysis. This is deemed as more parsimonious.

The mediation model resulted in an acceptable model fit, MLMχ^2(1046) = 1712.353, SCF = 1.2381, $p < .001$, RMSEA = .046 (90% CI = .042, .050, p =.939), CFI = .922, TLI = .916, SRMR =.076 (see *Figure 5.4.6*). As can be seen in the model and consistent with previous findings, negative expectancies likelihood is associated with more ALFOMO whereas negative expectancies evaluation is linked with less ALFOMO.

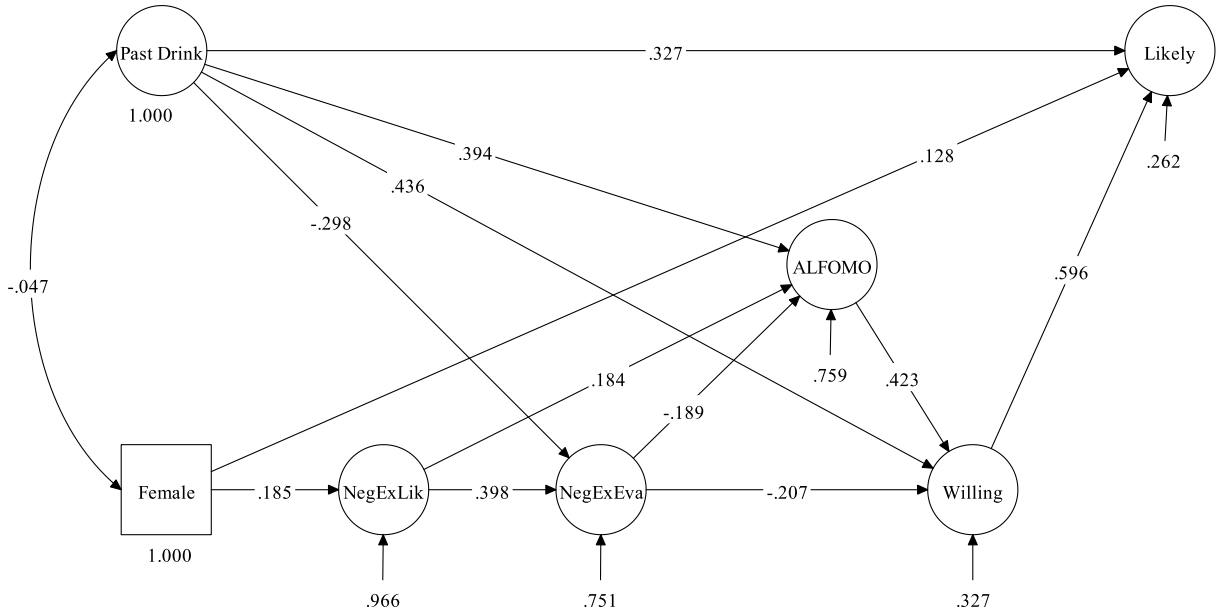

Figure 5.4.6. ALFOMO & Negative Expectancies: An Alternative Model

The interaction term (LikeXEva = Negative Expectancies Likelihood* Negative Expectancies Evaluation) was subsequently added to the previous mediation model. The interaction term significantly predicted ALFOMO (B =-.208, SE= .041, p <.001) and binge drinking willingness (B =-.061, SE= .033, p <.05). Due to the small effect size on willingness, the path linking the interaction term and binge drinking willingness was eliminated and the model was re-estimated, resulting in the model shown in *Figure 5.4.7.* It is worth noting that the negative expectancies evaluations have been recoded so that lower scores reflect good/favorable ratings and high scores reflect bad/non-favorable/severe ratings. As can be seen in *Figure 5.4.8.*, when negative expectancies are rated as good, higher likelihood of negative expectancies is linked with more ALFOMO. The reverse is true when those negative expectancies are rated as bad. That is, when negative expectancies are rated as more severe, higher likelihood becomes associated with less ALFOMO.

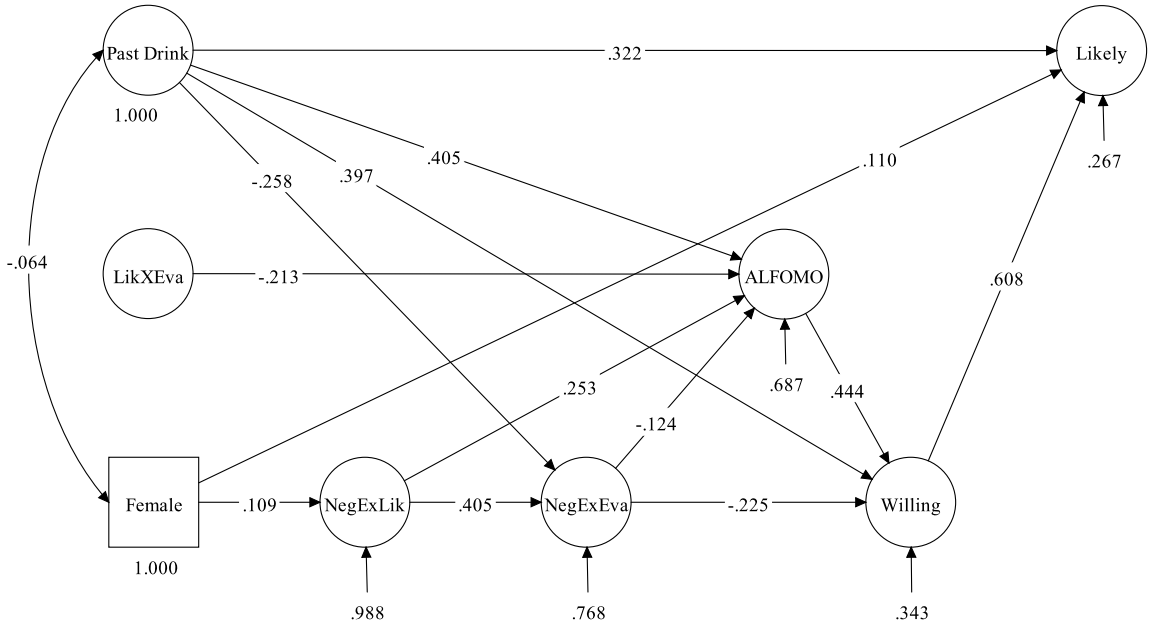

Figure 5.4.7. The Effect of the Interaction Between Negative Expectancies Likelihood and Evaluation on ALFOMO

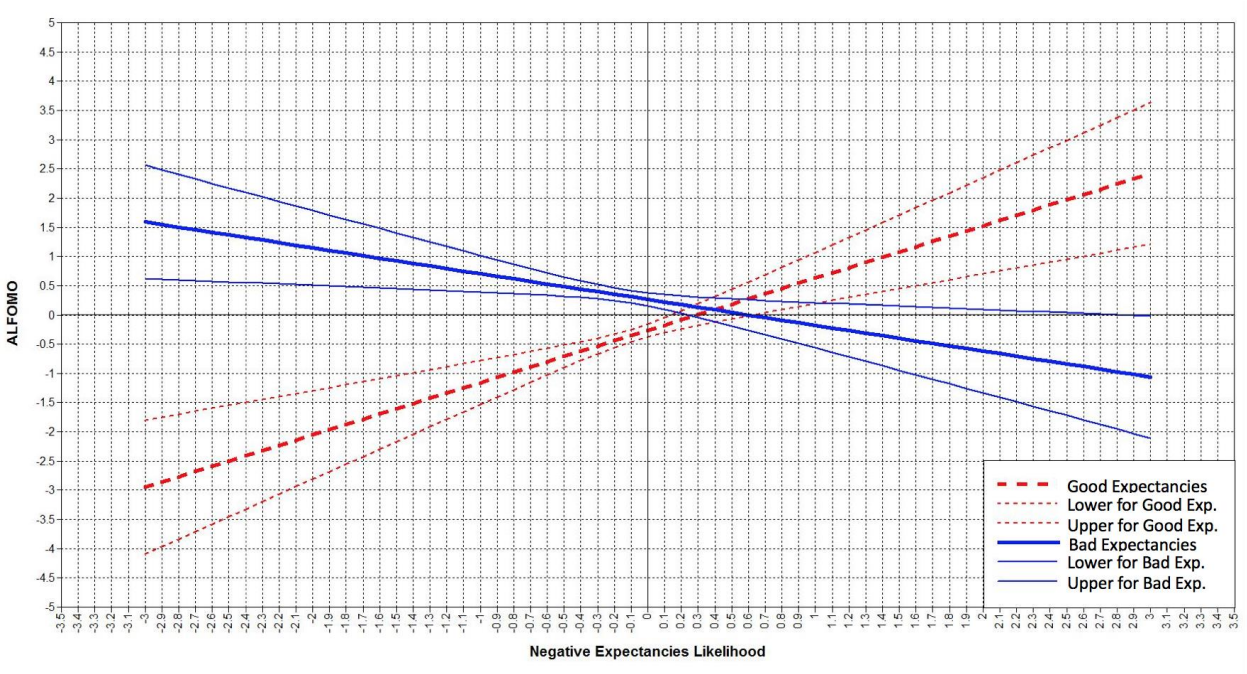

Figure 5.4.8. The Moderating Effect of Negative Expectancies Evaluation (Severity) on the Relationship Between Negative Expectancies Likelihood and ALFOMO.

5.5. ALFOMO and Peer Descriptive and Injunctive Norms

ALFOMO was predicted to amplify the positive effects of peer norms on binge drinking intentions. A mediation model was first estimated (see *Figure 5.5.1*). The model had a good fit, MLMχ^2 (858) = 1369.834, $p < .001$, SCF = 1.2565, RMSEA = .046 [90% CI = .042, .051, p =.919], CFI = .942, TLI = .936, SRMR =.069. As can be seen in the figure, peer injunctive norms significantly predict willingness and peer descriptive norms significantly predict ALFOMO and binge drinking likelihood. Tests of the indirect effects showed that ALFOMO significantly mediated the effect of descriptive norms on binge drinking willingness, B =.258, SE = .040, p <.001, [95% CI =.186, .349]. Moreover, descriptive norms influenced binge drinking likelihood through the serial mediation of ALFOMO and willingness, B =.130, SE = .026, p <.001, [95% CI =.084, .192]

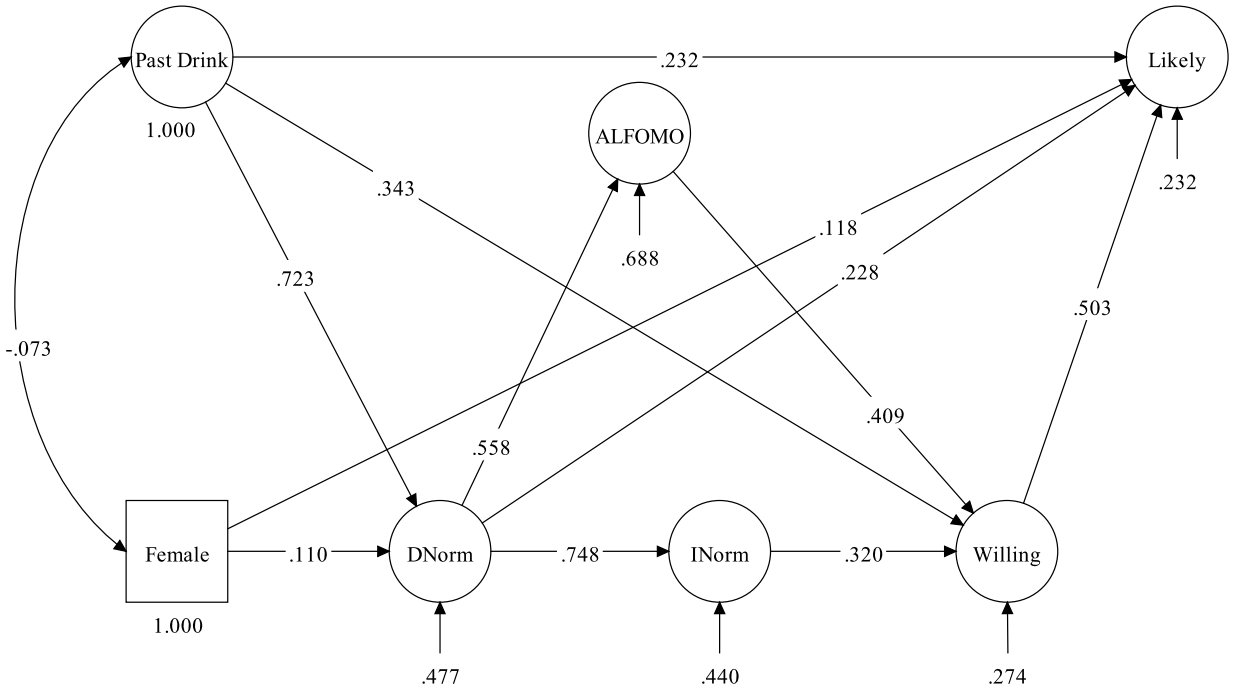

Figure 5.5.1. ALFOMO, Peer Descriptive & Injunctive Norms, & Binge Drinking Intentions.

The interaction terms (FOXDNO = ALFOMO*Descriptive Norms and FOXINO = ALFOMO*Injunctive Norms) were added to the model and the same paths were maintained (see *Figure 5.5.2*). The interaction between descriptive norms and ALFOMO significantly predicted willingness. Binge drinking willingness appears to be less reliant on descriptive norms among participants with high ALFOMO (see *Figure 5.5.3*). The interaction between injunctive norms and ALFOMO, in contrast and in line with hypotheses, had a positive effect on binge drinking willingness, such that the positive impact of peer injunctive norms was more pronounced among those with higher ALFOMO (see *Figure 5.5.4*).

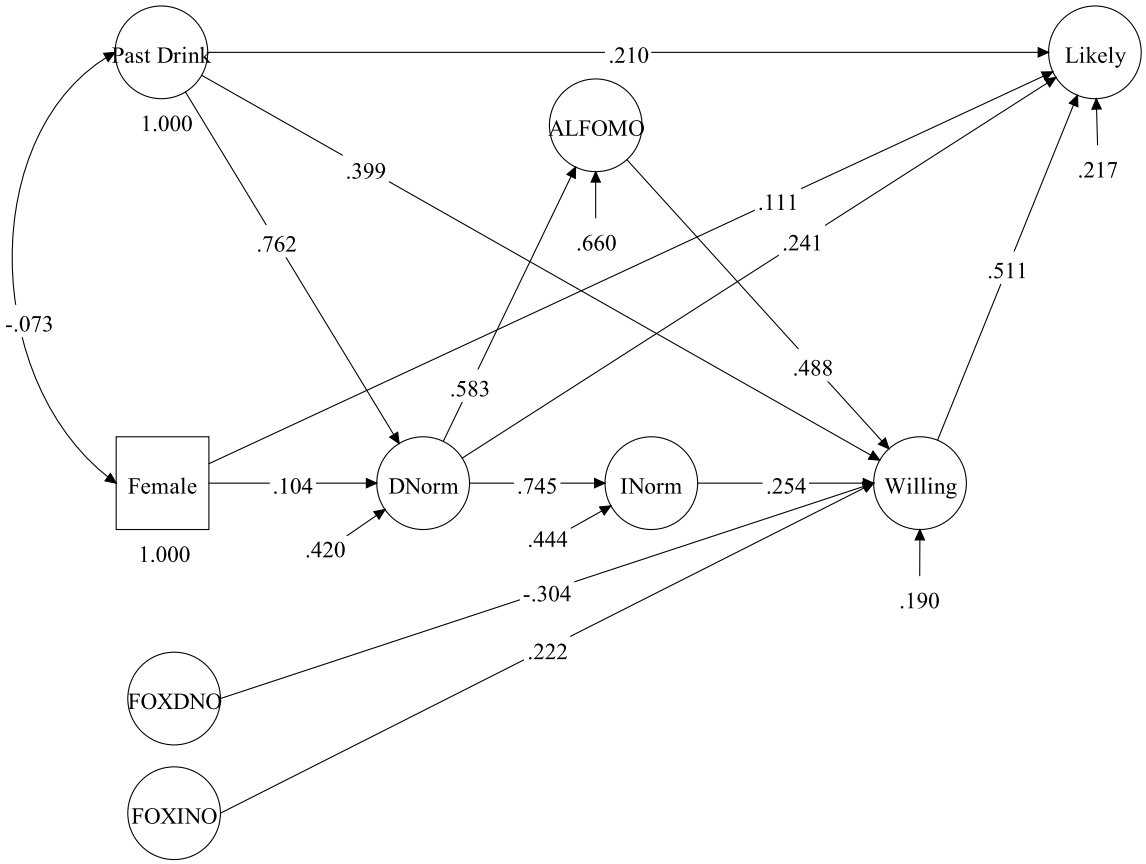

Figure 5.5.2. The Moderating Effect of ALFOMO on The Relationships Between Peer Descriptive & Injunctive Norms & Binge Drinking Intentions.

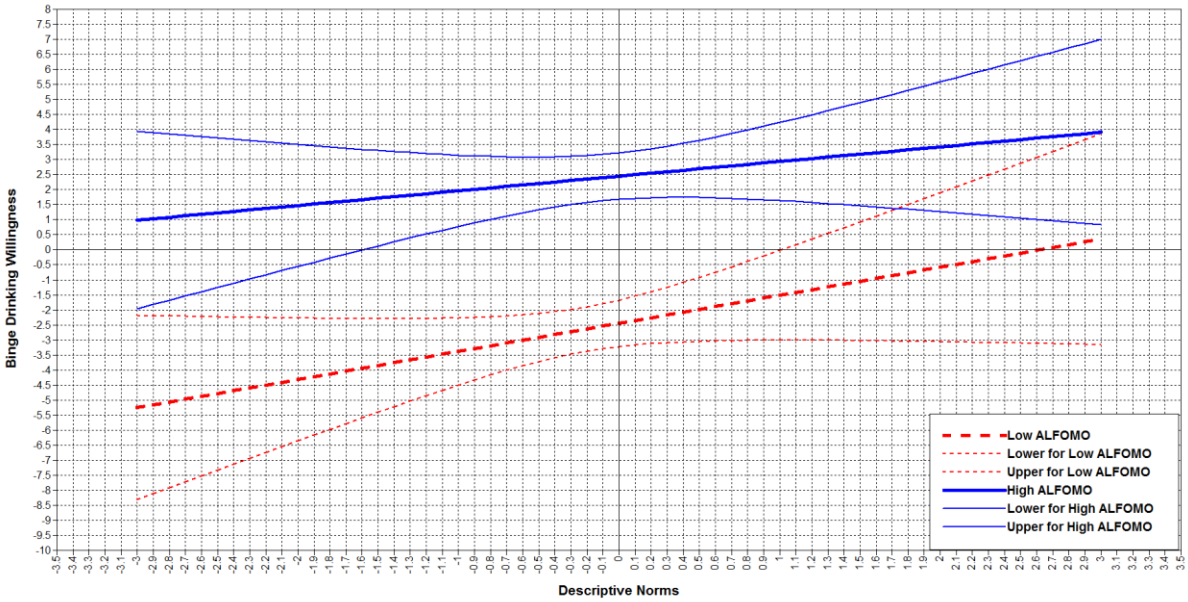

Figure 5.5.3. The Moderating Effect of ALFOMO on The Relationships Between Peer Descriptive Norms & Binge Drinking Willingness.

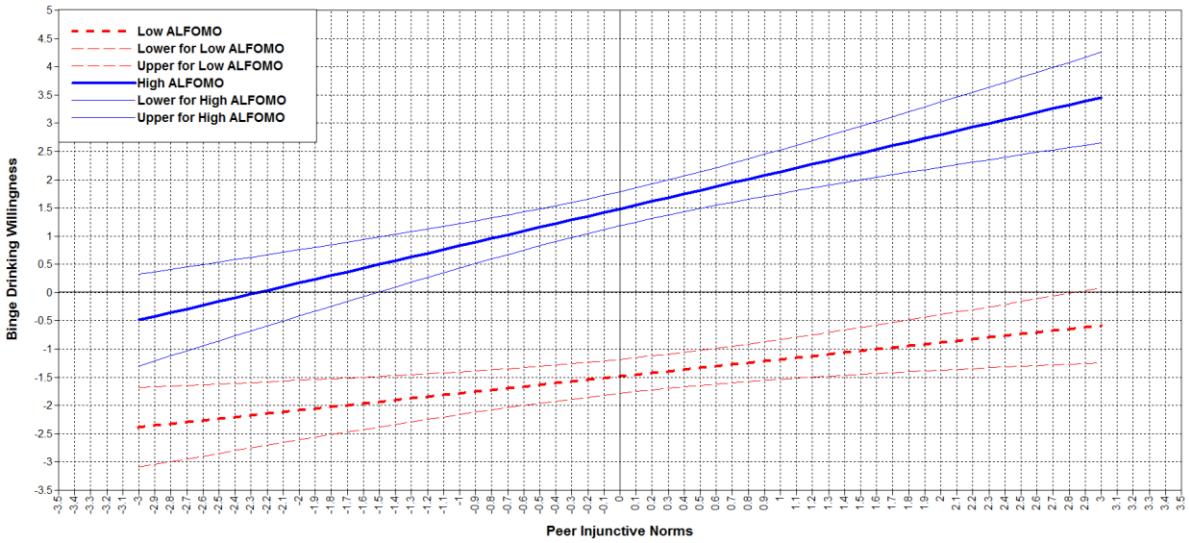

Figure 5.5.4. The Moderating Effect of ALFOMO on The Relationships Between Peer Injunctive Norms & Binge Drinking Willingness.

5.6. ALFOMO, Social Media, Alcohol Prevalence in Social Media Networks, Alcohol Perceived Fun, Frequency of Peer Support, and Binge Drinking Intentions

This section of the results focuses on the impact of social media use, alcohol prevalence in social media networks, alcohol perceived fun, and frequency of social (i.e. peer) support on the relationships between peer norms, ALFOMO and binge drinking intentions. A model was estimated by regressing ALFOMO on social media use and alcohol perceived fun and regressing frequency of peer support on descriptive and injunctive norms. The model was re-specified as necessary. The final model resulted in an adequate fit, MLM$\chi^2(2627) = 3992.556$, $p < .001$, SCF = 1.0633, RMSEA = .043 (90% CI = .041, .046, p =1.000), CFI = .922, TLI = .918, SRMR =.074 (see *Figure 5.6.1*). Mediation analyses indicated that there were many significant indirect effects (see Table 5.6.1).

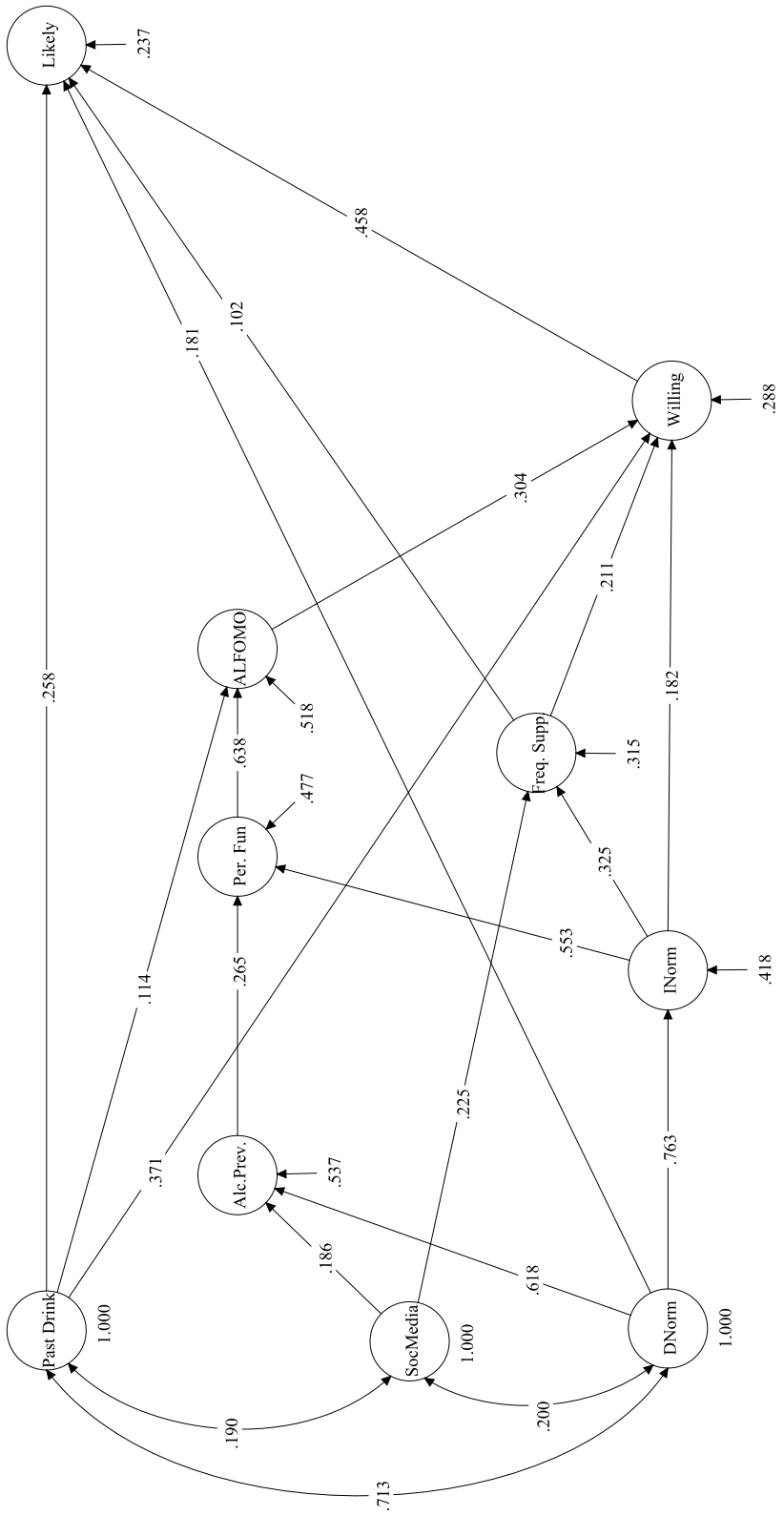

Figure 5.6.1. ALFOMO, Social Media, Alcohol Prevalence, Alcohol Perceived Fun, Frequency of Peer Support, and Binge Drinking Intentions with No Interaction.

Table 5.6.1

Significant Indirect Effects

	B (*SE*)	95% CI
1. Descriptive Norms → Injunctive Norms → Alcohol Perceived Fun	.471 (.078)***	.318, .624
2. Descriptive Norms→Injunctive Norms→Alcohol Perceived Fun →ALFOMO →Willingness	.081 (.020)***	.042, .120
3. Descriptive Norms→Injunctive Norms → Alcohol Perceived Fun → ALFOMO → Willingness → Likelihood	.040(.011) ***	.018, .062
4. Descriptive Norms → Injunctive Norms → Frequency of Social/Peer Support	.216 (.052)***	.113, .318
5. Descriptive Norms →Injunctive Norms →Frequency of Social/Peer Support → Willingness → Likelihood	.063 (.028)*	.009, .050
6. Descriptive Norms → Injunctive Norms → Willingness	.129 (.055)*	.022, .219
7. Injunctive Norms → Alcohol Perceived Fun → ALFOMO	.373 (.060)***	.256, .491
8. Injunctive Norms → Alcohol Perceived Fun → ALFOMO → Willingness	.107 (.025)***	.034, .154
9. Injunctive Norms → Willingness → Likelihood	.084 (.036)*	.013, .155
10. Injunctive Norms → Frequency of Social/Peer Support → Willingness	.080 (.023)***	.035, .125
11. Alcohol Perceived Fun → ALFOMO → Willingness	.172 (.034)***	.104, .239
12. Social Media Use →Frequency of Social/Peer Support→Willingness	.062 (.017)***	.028, .095

*** p <.001, **p <.01, * p < .05; Willingness = Binge Drinking Willingness, Likelihood = Binge Drinking Likelihood

The two interaction terms, FOxDNO (ALFOMO*descriptive norms) & FOxPIN (ALFOMO*injunctive norms) were added to the model. The interaction between ALFOMO and peer injunctive norms (FOxPIN) failed to significantly predict binge intentions, hence was eliminated from the model. The interaction between ALFOMO and peer descriptive norms (FOxDNO) significantly predicted willingness, B = -.157, SE = .060, p <.01. The log-likelihood differential test resulted in a significant D = 8.026, p <.005, suggesting that the interaction between ALFOMO and descriptive norms added a significant improvement to the model, hence worth retaining. As can be seen in *Figure 5.6.2*, for participants with low ALFOMO, willingness to binge drink appear to significantly increase as the perceived prevalence of binge drinking increase. For participants with high ALFOMO, willingness to binge drink seem to be less dependent on descriptive norms as participants maintained the same high degree of willingness, regardless of the extent of perceived prevalence of binge drinking.

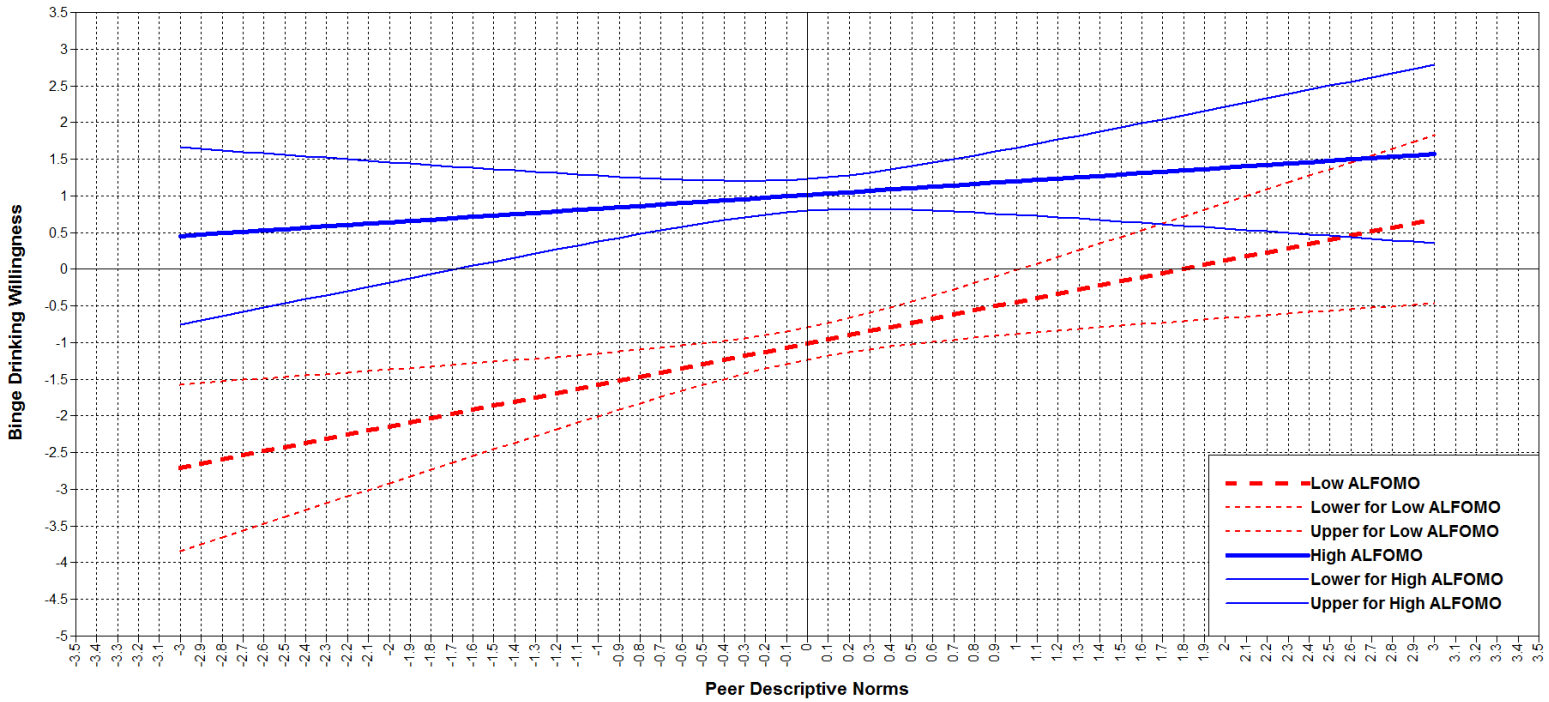

Figure 5.6.2. The Moderating Effect of ALFOMO on The Relationships Between Peer Descriptive Norms & Binge Drinking Willingness.

5.7. ALFOMO and Binge Drinking Intentions: A Combined Model

The last section of the results attempts to bring together ALFOMO, alcohol expectancies, peer norms, social media use, alcohol prevalence in social media networks, alcohol perceived fun, and frequency of social support, peer norms, and binge drinking intentions in one model. This model which combines all of the previous hypotheses would allow to examine the simultaneous effects of alcohol expectancies and peer norms in relation to ALFOMO and binge drinking intentions. The model resulted in a less than optimal fit. Therefore, the model was trimmed by eliminating variables that were adding less variance to the outcome variables (e.g. gender, negative expectancies likelihood and evaluation, alcohol prevalence in social networks). The final trimmed model, shown in *Figure 5.7.1*, had an acceptable fit, MLMχ^2(4845) = 7991.069, $p < .001$, RMSEA = .036 (90% CI = .035, .038, p =1.000), CFI = .905, TLI = .901, SRMR =.078.

As can be seen in the model, descriptive norms are still significantly associated with ALFOMO. Injunctive norms enhance the belief that being wasted is fun and are subsequently associated with more ALFOMO. Injunctive norms appear to increase binge drinking willingness through two paths. The first is through positive expectancies likelihood and evaluations. The second is through frequency of peer support. Mediation analysis using bootstrapped confidence intervals indicated the presence of a number of small yet significant indirect effects (see *Table 5.7.1*).

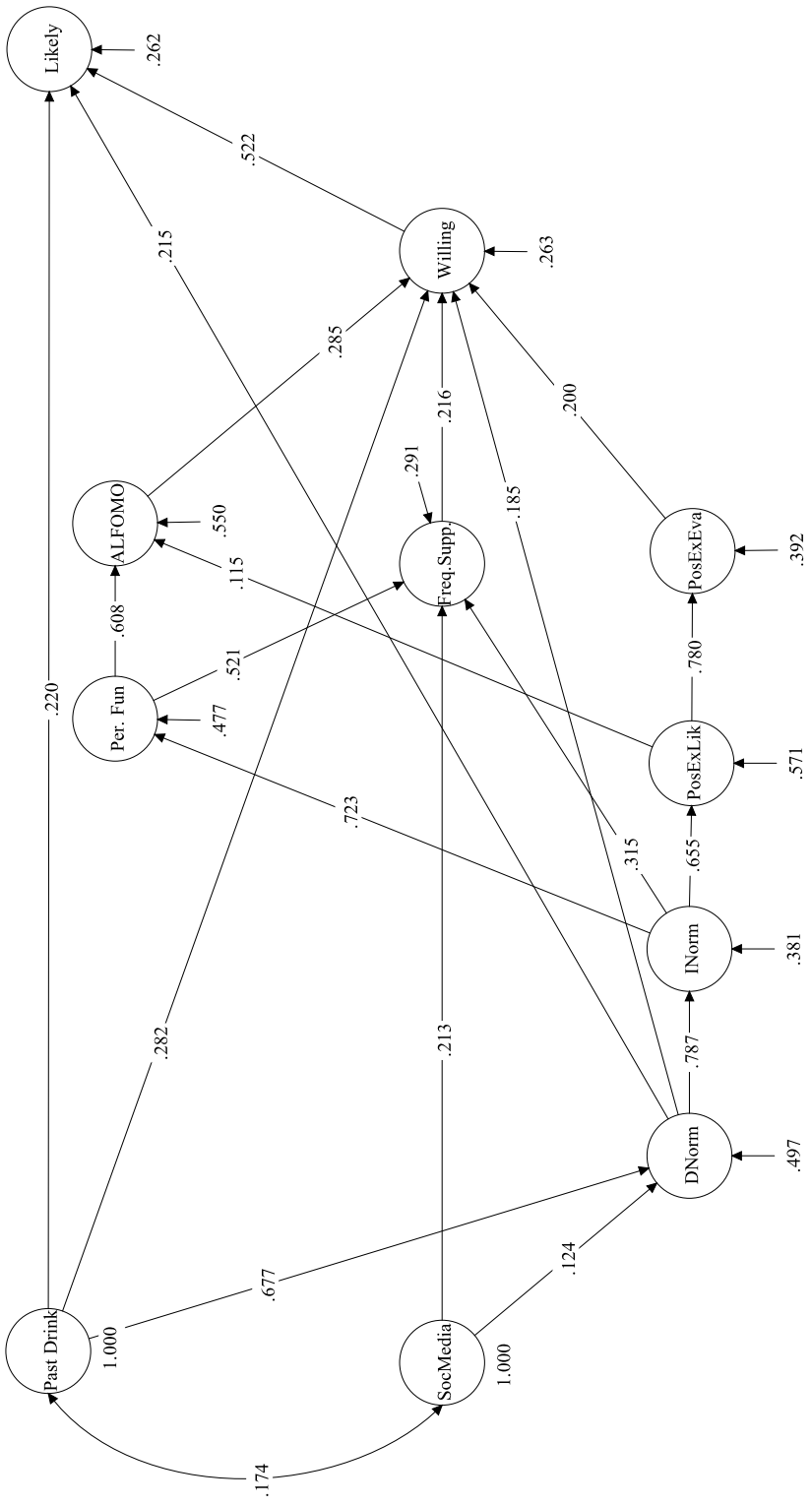

Figure 5.7.1. ALFOMO, Alcohol Expectancies, Peer Norms, and Binge Drinking Intentions

Table 5.7.1

Significant Indirect Effects

	B (*SE*)	95% CI
1. Descriptive Norms → Injunctive Norms → Frequency of Social/Peer Support →Willingness	.054 (.019)**	.024, .099
2. Descriptive Norms→Injunctive Norms→Positive Exp. Likelihood → Positive Exp. Evaluation →Willingness	.080 (.017)***	.050, .117
3. Descriptive Norms→Injunctive Norms → Alcohol Perceived Fun → Freq. Support → Willingness	.065 (.024) **	.026, .114
4. Descriptive Norms → Injunctive Norms → Alcohol Perceived Fun →ALFOMO →Willingness	.084 (.019)***	.058, .131
5. Injunctive Norms →Freq. Support → Willingness	.070 (.024)**	.027, .128
6. Injunctive Norms → Positive Exp. Likelihood → Positive Exp. Evaluation →Willingness	.103 (.021)***	.064, .144
7. Injunctive Norms → → Alcohol Perceived Fun → Freq. Support → Willingness	.083 (.031)**	.034, .146
8. Injunctive Norms → Alcohol Perceived Fun → ALFOMO → Willingness	.108 (.023)***	.077, .167
12. Social Media Use →Frequency of Social/Peer Support→Willingness	.047 (.016)**	.023, .086

*** p <.001, **p <.01, * p < .05; Willingness = Binge Drinking Willingness, Likelihood = Binge Drinking Likelihood

Chapter 6

Discussion

The goal of this dissertation was to further investigate the interplay between psychological and social factors in shaping binge drinking intentions among college students by bringing into the scholarly conversation the impact of alcohol-related FOMO. The main objectives of this dissertation were to 1) extend previous research on the general fear of missing out (FOMO) by investigating the effects of perceived peripherality, the need to belong, and fear of social exclusion from the group, 2) develop and validate a self-report measure of alcohol-related FOMO among college students, and 3) assess the role of alcohol-related FOMO in increasing binge drinking intentions among colleges student by positively mediating the relationship between alcohol positive expectancies and binge drinking intentions, reducing alcohol negative expectancies, and enhancing susceptibility to peer descriptive and injunctive norms. The results pertinent to each of the three objectives along with their implications are discussed below. A general discussion of the unique contributions, implications, and limitations, of this study will also be highlighted.

6.1. FOMO: The Effects of Peripherality, Need to belong, and Fear of Social Exclusion

The need to belong emerged as the best predictor of FOMO, accounting for approximately 60% of the total explained variance. In addition to the direct effect, the need to belong positively predicted FOMO via social media use, such that it increased social media use, which, in turn, heightened the FOMO experience. Fear of social exclusion and the need to belong failed to moderate the effect of perceived peripherality on FOMO.

These findings echo previous research conclusions affirming the pervasive influence of the need to belong in enhancing both the surveillance of social opportunities and the exerted

efforts for group inclusion (Baumeister, DeWall, Ciarocco, & Twenge, 2005; DeWall, Deckman, Pond, & Bonser, 2011; Gardner, Pickett, & Brewer, 2000; Pickett, Gardner, & Knowles, 2004). These findings are also in line with the previously confirmed positive link between the need for relatedness (i.e. connectedness) and FOMO (Przybylski et al., 2013).

Based on this study, it is fair to conclude that the need to belong largely determines fear of missing out in the social context. Perceived peripherality appears to be of a low risk, regardless of the degree of need to belong and fear of social exclusion. Since this is the first empirical evidence for the effects of perceived peripherality, need to belong, and fear of social exclusion on FOMO, further research is necessary to confirm the findings.

6.2. Alcohol-Related FOMO Scale: Development and Validation

Guided by the scarce research on FOMO, the abundant literature on college alcohol consumption, and student anecdotal experiences, thirty-four items were developed to reflect college students' fear of missing out on partying and drinking. Exploratory and confirmatory factor analyses yielded a final eighteen-item measure consisting of five distinct, yet inter-related, subscales that were named *parties*, *games*, *fun*, *buzz*, and *anticipated regret*, to respectively reflect fear of missing out on the drinking parties, drinking games, drinking-associated-fun, alcohol buzz, and the regret anticipated from not engaging in college drinking.

Analyses of alternative models in relation to the alcohol-related outcome variables supported the second-order alcohol-related FOMO scale where the five subscales were modeled as first-order factors. The adoption of the second-order ALFOMO model over the five-first-order-factor model also resonate well with scale development recommendations that consider higher-order models to be a more parsimonious and interpretable reflection of scales with factors

that were originally hypothesized to measure the same general construct (Chen, Sousa, & West, 2005).

Reliability and validity tests confirmed that the scale and the subscales had good internal consistencies and fulfilled the requirements for convergent, discriminant, and criterion-related validity. The large positive association between ALFOMO scale and sociability and conformity drinking motives further attests to the socially-driven nature of alcohol-related FOMO and indicates that ALFOMO is largely tied to social rewards and conformity needs. Despite the strength of the association, the amount of unshared variance between ALFOMO, on one hand, and social and conformity motives, on the other, remained significantly large, ranging between .56 and .70, thus confirming the validity of ALFOMO as a distinct scale. Furthermore, scores on the ALFOMO scale significantly predicted early onset of alcohol use, frequency of past binge drinking, alcohol-related problems, and frequency of past preloading behavior as well as future binge drinking intentions.

Invariance tests of the factorial structure of ALFOMO confirmed that the scale was generally equivalent across gender, hence no gender bias. Although females had higher means on fear of missing out on *parties* and *buzz*, their mean on the general alcohol-related FOMO was not statistically different from that of the males. It is important to note that the difference in means might be an artifact of the relatively smaller sample size of male participants.

Overall, the alcohol-related FOMO or ALFOMO is the first self-report measure to tap the fear of missing out that is particularly associated with college partying and drinking. Its multidimensionality has been validated through confirmatory analyses and its factorial structure is free of gender bias. Consisting of eighteen items, alcohol-related FOMO scale can be administered in less than five minutes, thus can be easily and efficiently incorporated with other

instruments. Moreover, the validated distinct subscales of ALFOMO, which can be used individually, allow for teasing apart the effects of these subscales on alcohol-related outcomes and potentially targeting particular sub-concepts of ALFOMO for interventions.

6.3. ALFOMO: The Effects of FOMO, Social Identification, Self-Relevance, Attitudes, College Perceptions & Social Image

Regression analysis confirmed the positive effects of FOMO, social identification with heavy drinkers, positive alcohol attitudes, and social image in predicting ALFOMO. ALFOMO is likely to be experienced by individuals who experience the general fear of missing out, identify with those who binge drink, endorse positive attitudes towards alcohol, and hold more favorable images of binge drinkers. Considering the novelty of the newly developed ALFOMO scale, the aforementioned links cannot be directly verified within the context of the current literature. However, the positive associations between these variables give credence to the potential role of ALFOMO in mediating the established relationships between 1) social identification and college drinking (Neighbors et al., 2010; Reed, Lange, Ketchie, & Clapp, 2007), and 2) social image and attitudes, on one hand, and alcohol-related outcomes, on the other (Chassin, Tetzloff, & Hershey, 1985; Moeller & Crocker, 2009).

6.4. ALFOMO, Alcohol Positive Expectancies, and Binge Drinking Intentions

The results of this study confirmed that participants who expected alcohol consumption to result in more positive outcomes and evaluated those outcomes more favorably had greater intentions for binge drinking. These findings provide additional support for the empirically well-established positive link between positive expectancies and binge drinking intentions (Brown, Christiansen, & Goldman, 1987; Fromme, Stroot, & Kaplan, 1993; Hasking, Lyvers, & Carlopio,

2011; Ibáñez et al., 2015; Leeman, Toll, Taylor, & Volpicelli, 2009; Patrick, Cronce, Fairlie, Atkins, Lee, 2016; Zamboanga, Schwartz, Ham, Borsari, & Van Tyne, 2010).

Furthermore, this study further extends the current literature on alcohol positive expectancies by providing the first empirical support for the role of alcohol-related FOMO in mediating the relationship between positive, and particularly sociability, expectancies likelihood and binge drinking willingness. As predicted, the anticipation of positive expectancies heightened alcohol-related FOMO, which subsequently increased binge drinking intentions.

Moreover, moderation analyses confirmed the role of positive expectancies evaluation in moderating the effects of perceived likelihood of positive expectancies on alcohol-related FOMO and binge drinking willingness. The significant interaction effects indicated that participants experienced more alcohol-related FOMO and had greater willingness to binge drinking when they rated the alcohol positive expectancies more favorably. Less favorable evaluations of the positive expectancies undermined the positive effect of positive expectancies likelihood on ALFOMO and binge drinking willingness. The effect of perceived evaluations of positive expectancies in moderating the relationship between positive expectancies and drinking intentions is in tune with previous research (Fromme & D'Amico, 2000; Neighbors, Lewis, Bergstrom, & Larimer, 2006; Patrick, Cronce, Fairlie, Atkins, & Lee, 2016; Patrick & Maggs, 2011; Werner, Walker, & Greene, 1993). These findings also appear to be congruent with the expectancy-value theory (Ajzen, 2005), which states that the more value attached to positive expectancies, the more attractive and appealing they become. Higher evaluation of positive expectancies, a proxy for their higher perceived appeal, did, as predicted, strengthen the positive link between positive expectancies, on one hand, and alcohol-related FOMO and binge drinking intentions, on the other.

Subsequent analyses of the specific types of positive expectancies revealed that ALFOMO significantly mediated the positive effects of perceived likelihood of sexual enhancement (i.e. sexuality), courage expectancies and tension reduction on binge drinking intentions. Participants who endorsed the sexual and courage enhancement and tension reduction expectancies of alcohol experienced more alcohol-related FOMO and reported greater willingness to binge drink.

Of all the specific positive expectancies, it was the sociability expectancies that had the strongest association with ALFOMO and binge drinking intentions. Sociability expectancies likelihood significantly increased binge drinking willingness indirectly through the significant mediation of ALFOMO. Participants who had higher expectations of alcohol as a social lubricant experienced more ALFOMO than those with lower social lubricant expectations, and, subsequently, reported greater willingness to binge drink. Further, evaluations of sociability expectancies significantly moderated the positive effects of sociability expectancies likelihood on ALFOMO. That is, alcohol-related FOMO was significantly more prevalent among participants who rated the sociability expectancies more favorably than those rating them less favorably. The robust association between sociability expectancies, ALFOMO and binge drinking intentions is in line with previous research that reported the salience of sociability expectancies among college students (LaBrie, Lamb, & Pederson, 2009; Leeman, Toll, Taylor, & Volpicelli, 2009; McBride, Barrett, Moore, & Schonfeld, 2014).

Overall, the results of this study lend credence to the integral role of ALFOMO in mediating the link between the alcohol positive expectancies and binge drinking intentions. An adequate understanding of binge drinking among college students should, therefore, take into account the impact of alcohol-related FOMO.

6.5. ALFOMO and Alcohol Negative Expectancies

Conceptualized as a risk aversive motivational state, ALFOMO was predicted to decrease negative expectancies likelihood and severity such that they appear less likely to occur and less severe. These hypotheses were partially supported. ALFOMO slightly decreased the severity of the general negative expectancies as well as impairment and aggression expectancies. The effect of ALFOMO on decreasing the severity of negative expectancies is aligned with the self-regulation theories (Baumeister, Heatherton, & Tice, 1994; Loewenstein, O'Donoghue, and Bhatia, 2015). Operating under the affective, rather than the deliberative system, ALFOMO appears to be a risk-aversive impulse. Driven by alcohol-related FOMO, participants generally showed less sensitivity to the severity of alcohol negative expectancies and exhibited more intentions for binge drinking.

Subsequent analyses of the specific types of the negative expectancies revealed that the perceived severity of negative, impairment, and self-perception expectancies significantly decreased binge drinking intentions. Participants who rated the negative, impairment, and self-perception (i.e. feeling moody, guilty, & self-critical) expectancies of alcohol consumption as more severe had less willingness to binge drink. The negative link between perceived severity and binge drinking intentions echo previous research findings that support the impact of negative expectancies on reducing alcohol consumption (Fromme Stroot, & Kaplan, 1993; Fromme & D'Amico, 2000) and risky behaviors in general (Brewer et al., 2007; Brewer, Weinstein, Cuite, & Herrington, 2004).

While decreasing the perceived severity of negative expectancies, ALFOMO, contrary to predictions, was associated with more perceived likelihood of negative, impairment and aggression expectancies among males and females. Participants who reported greater alcohol-

related FOMO also had higher expectancies for being impaired and aggressive as a result of alcohol consumption.

The relationships between negative expectancies likelihood and binge drinking intentions were of mixed nature and differed across gender. Among males, while the negative and impairment expectancies significantly increased binge drinking intentions, aggression expectancies, in contrast, decreased drinking intentions. Among females, the links between negative, impairment, and aggression expectancies, on one hand, and binge drinking intentions, on the other were non-significant. The exception from all negative expectancies was the perceived likelihood of self-perception expectancies which significantly decreased binge drinking intentions for both males and females, such that those who associated alcohol consumption with mood swings and expected to feel guilty and self-critical afterwards had lower intentions for binge drinking.

The results pertinent to perceived likelihood of negative expectancies are clearly in tune with the mixed empirical support for the impact of negative expectancies in predicting binge drinking intentions (e.g. Hasking, Lyvers, & Carlopio, 2011; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007; Patrick, Wray-Lake, Finlay, & Maggs, 2010; Read, Wardell, & Bachrach, 2013). The empirical evidence is still inconclusive as whether negative expectancies increase, decrease, or completely irrelevant to alcohol consumption. Previous research has highlighted some of the methodological and conceptual inconsistencies that contributed to the mixed findings (see Jones, Corbin, & Fromme, 2001).

The alternative model where negative expectancies evaluation (i.e. severity) was modeled as a moderator between negative expectancies likelihood and ALFOMO and binge drinking intentions appears to provide a more logical understanding of how negative expectancies operate

and is in tune with the propositions made by previous research (e.g. Fromme, Stroot, Kaplan, 1993, Merrill, Lopez-Vergara, Barnett, & Jackson, 2016). Based on this alternative model, for participants rating the so called negative expectancies as bad, higher likelihood of those expectancies was associated with less alcohol-related FOMO and subsequently less willingness to binge drink. When they did not expect to experience those negative outcomes, but still rated them as bad, they reported more ALFOMO. The reverse is true for participants who rated the negative expectancies as good or favorable, such that higher likelihood was associated with more ALFOMO and lower likelihood was linked to less ALFOMO. Future research exploring negative expectancies should always include the perceived evaluation or favorability of those expectancies because of their explanatory power. It should also provide more empirical testing with more robust research designs and methodologies of how negative expectancies operate.

The results further suggest that the links between negative expectancies and binge drinking intentions operate differently across gender and are likely to vary in terms of their valence based on the specific type of negative expectancies. Recommendations for the investigation of the different types of negative expectancies have been made by researchers who found evidence for the differential impact of various kinds of negative expectancies (e.g. Read, Wardell, & Bachrach, 2013). Future research should further examine the specific types of negative expectancies (i.e. impairment, aggression, & self-perception) in relation to binge drinking intentions. Future research should also exercise caution when labeling expectancies; calling an expectancy negative does not necessarily mean that they are perceived as negative by participants. Impairment, which is labeled as negative among scholars, appears to be positively viewed by male participants, who may actually drink to get the buzz feeling and dissociate from their reality.

The results of this study also provided support for the differential impact of binge drinking beliefs (i.e. perceived risk, familiarity, and control over binge drinking) across gender. Perceived control over binge drinking risks was associated with less perceived likelihood and severity of negative expectancies (i.e. less likely to occur and less severe than they could be) and more willingness to binge drink among males and females. Perceived risk of binge drinking was, in contrast, associated with more perceived likelihood and severity of negative expectancies among females. Among males, perceived risk of binge drinking was associated with less perceived severity of negative expectancies and less willingness to binge drink.

It is noteworthy to acknowledge that the results related binge drinking beliefs must be taken with extreme caution, due to the fact that the each of the three binge drinking beliefs scales (i.e. latent factors) are made up of only two items. Two-item scales are particularly problematic in structural equation modeling, which recommends a minimum of three indicators per factor, and often viewed with skepticism (Tabachnick & Fidell, 2001). The more items the scale has, the more likely that it will replicate (Little, Lindenberger & Nesselroade, 1999; Raubenheimer, 2004). Nonetheless, this study has attempted to take into account the impact of binge drinking beliefs while modeling negative expectancies and binge drinking intentions. Findings confirmed that even after controlling for binge drinking beliefs (i.e. perceived risk, familiarity, and control over binge drinking), the positive association between perceived likelihood of negative expectancies and willingness to binge drink among males remained strongly significant. However, due to the fact that the binge drink beliefs were two-item scales, future research using more robust scales for binge drinking beliefs is necessary to further clarify the role of negative expectancies in relation to being drinking.

6.6. ALFOMO and Peer Descriptive and Injunctive Norms

ALFOMO was predicted to be closely tied with peer norms and to amplify their positive association with binge drinking intentions. These hypotheses were partially supported. First and foremost, ALFOMO emerged as mediator between peer descriptive norms and binge drinking willingness, indicating that perceived prevalence of binge drinking among friends sparked more alcohol-related FOMO within individuals and was associated with more binge drinking intentions. The role of ALFOMO in intervening the link between descriptive norms and binge drinking intentions adds a significant contribution to the bulk of peer norm research that often assumes a direct link between peer descriptive norms and drinking behavior (e.g. Baer, 2002; Borsari & Carey, 2003; Perkins & Berkowitz, 1986; Perkins, Haines and Rice, 2005; Perkins & Wechsler, 1996; Rimal, 2008).

Moderation analyses confirmed the significance of proposed interaction effects between ALFOMO and peer descriptive norms on binge drinking intentions. Although the positive association between peer descriptive norms and willingness to binge drink appeared to be stronger among those with low ALFOMO, it was clear that for participants with high ALFOMO, binge drinking willingness was consistently higher than those with less ALFOMO and seemed less reliable on peer descriptive norms. In other words, participants with high ALFOMO seemed to have relatively higher willingness to binge drink, regardless of peer descriptive norms.

The pattern of the interaction effects between ALFOMO and peer injunctive norms was consistent with the proposed hypothesis, such that among participants with higher ALFOMO, perceived peer injunctive norms were associated with more willingness and likelihood to binge drink. Among participants with relatively low alcohol-related FOMO, the positive association between peer injunctive norms and binge drinking willingness was weaker. Similar to the pattern

seen in descriptive norms, willingness to binge drink was consistently higher among those with high ALFOMO.

6.7. ALFOMO, Social Media Use, Alcohol Perceived Fun, Frequency of Peer Support, & Binge Drinking intentions

Modeling ALFOMO with social media use, perceived fun of alcohol, frequency of peer support, and binge drinking intentions allowed for examining the bigger picture of ALFOMO in relation to binge drinking intentions. Mediation analysis of the model confirmed the significant role of alcohol perceived fun, ALFOMO, frequency of social/peer support in mediating the relationship between peer norms and binge drinking intentions.

The moderation analysis carried out in the model combining ALFOMO, social media use, alcohol perceived fun, frequency of peer support, peer norms, and binge drinking intentions suggested the non-significance of ALFOMO in moderating the links between peer injunctive norms and binge drinking intentions. However, the interaction between ALFOMO and peer descriptive norms was significant in predicting binge drinking willingness. Similar to previous findings, participants with high ALFOMO seem to maintain the highest levels of binge drinking willingness, regardless of the perceived prevalence of binge drinking. For those with low ALFOMO, willingness to binge drink increased as the perceived prevalence of binge drinking increased.

Contributions and Implications

This study offers several unique contributions. First, by focusing on the general fear of missing out, it has contributed not only to the redemption of this ubiquitous concept in the scholarly realm, but also to the understanding of the intertwined social and psychological factors that trigger it. Furthermore, this study contributes to the vast research of college drinking by

bringing into the scholarly discussion the concept of fear of missing out that is particularly associated with college drinking (i.e. ALFOMO). Using alcohol-related FOMO scale to understand binge drinking among college students sheds light on the interplay between the internal psychological processes and external social influences. By consistently remaining a significantly focal predictor of binge drinking willingness in all of the study models, this study provides a compelling evidence for the indispensability of ALFOMO in the context of college drinking.

Findings of this study can be used to further understand the mechanisms linking various risk factors and binge drinking intentions. While peer influences and alcohol positive expectancies, for example, have long been empirically validated as key risk factors for alcohol consumption, the mechanisms behind these relationships have been largely unexplored. This study offers insights into the significant impact of ALFOMO in shaping some of these mechanisms. Findings can also be used to investigate different arrays of risk behaviors such as smoking marijuana.

This study also suggests a number of valuable avenues for future research. Exploring the salience of alcohol-related FOMO in various situational contexts, such as house/Greek parties and 21st birthday celebrations, and how it shapes binge drinking behavior in these contexts can offer valuable insights. Another related avenue for future research is the investigation of the within- and between- variance of alcohol-related FOMO by examining individual-level factors and social- and contextual-level factors such as joining college, fraternity or sorority groups. Furthermore, it may be worthwhile to examine the psychological factors that would bolster individuals' will to resist social temptations that trigger ALFOMO.

Researchers are also highly encouraged to use alcohol-related FOMO scale with different college populations and refine its measurement. They can also replicate the study to validate factorial structure of the scale. Future research would also benefit from prospective designs that allow for the empirical investigation of causal relationships and changes of ALFOMO over time as student mature.

The current study has practical implications for future interventions. Recognizing alcohol-related FOMO as an important element in the binge drinking process helps hone intervention strategies. ALFOMO can be integrated in the normative feedback interventions. Making college students aware of this internal process might enable them to resist social temptations. Many students associate fun with alcohol consumption –gleefully claiming that those who choose not to drink are 'seriously missing out.' Convincing college students that they can still enjoy the party without binge drinking might help bolster their will against temptations. As suggested by the results of this study, emphasizing alcohol risks and severity of consequences might also be a valuable intervention for at least some students.

Limitations

Despite the maximum care taken to ensure the validity and reliability of this dissertation, there were a number of unavoidable methodological limitations. First, although a thorough review of both academic and non-academic sources was conducted to ensure the content and conceptual adequacy of alcohol-related FOMO scale, it is possible that future researchers find more items and factors that better capture the ALFOMO. Second, considering the novelty of the scope of this study, there was little academic research to start with. Results, therefore, provide a preliminarily evidence for the effects of ALFOMO. Third, since this is the first time that the ALFOMO scale was used, a replication study is highly recommended to validate the results of

the current study. Fourth, although the sample size of this study (N = 490) is considered to be statistically adequate (Hinkin, Tracey, & Enz, 1997; Yong & Pearce, 2013), its gender make up was unequal, with a 2:3 male-female ratio. The relatively smaller male sample size proved to be problematic in multi-group analyses, where the number of male participants sometimes dropped to ninety after list-wise deletion.

Fifth, the questionnaire for this study was considerably long. This has resulted in large percentage of data missingness and deletion of many severe incomplete cases (i.e. about 100 cases). Sixth, all of the study measures relied on self-reported data, thus might be tainted with cognitive, affective, and social desirability biases. Considering that ALFOMO is a reward-driven and risk aversive impulse, it is very likely that it becomes more prevailing in situational contexts like parties and pubs. Therefore, the retrospective self-measure adopted by this study may not have accurately captured its true fleeting nature and magnitude. Finally, given the cross-sectional nature of the study, the results are all correlational and should not be used to claim causal relationships.

Closing Remarks

Decades of research on college drinking have validated the positive links between risk factors, such as alcohol positive expectancies and peer norms, and binge drinking. The mechanisms leading from such risk factors to binge drinking have however been largely under-analyzed. The present work provides the first empirical and theoretical investigation of alcohol-related FOMO in the pathways linking alcohol expectancies and peer norms with binge drinking intentions. The findings confirm the integral role of the alcohol-related FOMO in shaping binge drinking intentions among college students through mediating the positive effect of alcohol positive expectancies, reducing the severity of negative expectancies, and increasing

susceptibility to peer injunctive norms. The robust associations linking ALFOMO with alcohol expectancies and peer norms further affirm its indispensability in the college drinking research and provide evidence for its promising role in future research and interventions.

References

Abel, J. P., Buff, C. L., & Burr, S. A. (2016). Social Media and the Fear of Missing Out: Scale Development and Assessment. *Journal of Business & Economics Research (Online)*, *14*(1), 33.

Aggarwal, P., Jun, S. Y., & Huh, J. H. (2011). Scarcity messages. *Journal of Advertising*, *40*(3), 19-30.

Ajzen, I. (2005). *Attitudes, personality, and behavior*. McGraw-Hill Education (UK).

Antai, D., Lopez, G. B., Antai, J., & Anthony, D. S. (2014). Alcohol drinking patterns and differences in alcohol-related harm: a population-based study of the United States. *BioMed research international*, *2014*.

Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, *16*(3), 397-438.

Asparouhov, T., & Muthén, B. (2010). Multiple imputation with Mplus. *MPlus Web Notes*.

Baer, J. S. (1994). Effects of college residence on perceived norms for alcohol consumption: An examination of the first year in college. *Psychology of Addictive Behaviors*, *8*(1), 43.

Baer, J. S. (2002). Student factors: understanding individual variation in college drinking. *Journal of Studies on Alcohol, Supplement*, (14), 40-53.

Baer, J. S., Stacy, A., & Larimer, M. (1991). Biases in the perception of drinking norms among college students. *Journal of studies on alcohol*, *52*(6), 580-586.

Baum, A., Revenson, T. A., & Singer, J. (Eds.). (2012). *Handbook of health psychology*. Taylor & Francis.

Baumeister, R. (2011). The need-to-belong theory. *Handbook of theories of social psychology*, *2*, 121-140.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological bulletin*, *117*(3), 497.

Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Twenge, J. M. (2005). Social exclusion impairs self-regulation. *Journal of personality and social psychology*, *88*(4), 589.

Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. Academic press.

Beaqon. (2006, October 2). FOMO. In *Urban Dictionary*. Retrieved October, 23, 2015, from http://www.urbandictionary.com/define.php?term=fomo

Beck, M. (2013, August 2). Fighting FOMO: 3 strategies to beat your fear of missing out [Website post]. Retrieved from http://www.huffingtonpost.com/2013/08/02/fomo-fear-of-missing-out_n_3685195.html

Bertea, P., & Zait, A. (2011). Methods for testing discriminant validity. *Management & Marketing-Craiova*, (2), 217-224.

Bond, A. (2015, June 3). Corporate "fear of missing out" drives business leaders to expand abroad. Retrieved from http://www.reuters.com/article/2015/06/03/il-grant-thornton-idUSnBw036159a+100+BSW20150603

Borsari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of studies on alcohol*, *64*(3), 331.

Borsari, B., Neal, D. J., Collins, S. E., & Carey, K. B. (2001). Differential utility of three indexes of risky drinking for predicting alcohol problems in college students. *Psychology of Addictive Behaviors*, *15*(4), 321.

Bradley, J. R., Carman, R. S., & Petree, A. (1992). Personal and social drinking motives, family drinking history, and problems associated with drinking in two university samples. *Journal of drug education*, *22*(3), 195-202.

Brewer, N. T., Chapman, G. B., Gibbons, F. X., Gerrard, M., McCaul, K. D., & Weinstein, N. D. (2007). Meta-analysis of the relationship between risk perception and health behavior: the example of vaccination. *Health Psychology*, *26*(2), 136.

Brewer, N. T., Weinstein, N. D., Cuite, C. L., & Herrington Jr, J. E. (2004). Risk perceptions and their relation to risk behavior. *Annals of Behavioral Medicine*, *27*(2), 125-130.

Brown, J. D. (2009). Choosing the right type of rotation in PCA and EFA. *JALT Testing & Evaluation SIG Newsletter*, *13*(3), 20-25.

Brown, S. A., Christiansen, B. A., & Goldman, M. S. (1987). The Alcohol Expectancy Questionnaire: an instrument for the assessment of adolescent and adult alcohol expectancies. *Journal of studies on alcohol*, *48*(5), 483-491.

Bryant, F. B., & Satorra, A. (2012). Principles and practice of scaled difference chi-square testing. *Structural Equation Modeling: A Multidisciplinary Journal*, *19*(3), 372-398.

Burke, R. S., & Stephens, R. S. (1999). Social anxiety and drinking in college students: A social cognitive theory analysis. *Clinical Psychology Review*, *19*(5), 513-530.

Byrne, B. M. (2013). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Routledge.

Cameron, J. E. (2004). A three-factor model of social identity. *Self and identity*, *3*(3), 239-262.

Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (HHS

Publication No. SMA 15-4927, NSDUH Series H-50). Retrieved from http://www.samhsa.gov/data/

Centers for Disease Control and Prevention. (2007). Unintentional poisoning deaths--United States, 1999-2004. *MMWR: Morbidity and mortality weekly report*, *56*(5), 93-96.

Chassin, L., Tetzloff, C., & Hershey, M. (1985). Self-image and social-image factors in adolescent alcohol use. *Journal of Studies on Alcohol*, *46*(1), 39-47.

Chen, F. F., Sousa, K. H., & West, S. G. (2005). Teacher's corner: Testing measurement invariance of second-order factor models. *Structural equation modeling*, *12*(3), 471-492.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural equation modeling*, *9*(2), 233-255.

Child, D. (2006). *The essentials of factor analysis*. A&C Black.

Christiansen, B. A., & Goldman, M. S. (1983). Alcohol-related expectancies versus demographic/background variables in the prediction of adolescent drinking. *Journal of Consulting and Clinical Psychology*, *51*(2), 249.

Cialdini, R. B. (1993). Influence: Science and practice. New York: Harper Collins.

Cialdini, R. B. (2008). Influence: Science and practice (5th ed.). Boston , MA: Pearson Education.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: recycling the concept of norms to reduce littering in public places. *Journal of personality and social psychology*, *58*(6), 1015.

Çokluk, Ö., & Koçak, D. (2016). Using Horn's Parallel Analysis Method in Exploratory Factor Analysis for Determining the Number of Factors. *Educational Sciences: Theory & Practice*, *16*(2).

Collins, R. L. (1996). For better or worse: The impact of upward social comparison on self-evaluations. *Psychological bulletin*, *119*(1), 51.

Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: the effects of social interaction and model status on the self-administration of alcohol. *Journal of consulting and clinical psychology*, *53*(2), 189.

Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological assessment*, *6*(2), 117.

Cox, W. M., & Klinger, E. (1990). Incentive motivation, affective change, and alcohol use: A model. *Why people drink: Parameters of alcohol as a reinforcer*, 291-314.

Cyders, M. A., & Smith, G. T. (2008). Emotion-based dispositions to rash action: positive and negative urgency. *Psychological bulletin*, *134*(6), 807.

Cyders, M. A., Littlefield, A. K., Coffey, S., & Karyadi, K. A. (2014). Examination of a short English version of the UPPS-P Impulsive Behavior Scale. *Addictive behaviors*, *39*(9), 1372-1376.

DeWall, C. N., Deckman, T., Pond, R. S., & Bonser, I. (2011). Belongingness as a core personality trait: How social exclusion influences social functioning and personality expression. *Journal of personality*, *79*(6), 1281-1314.

Dossey, L. (2014). FOMO, digital dementia, and our dangerous experiment. *Explore: The Journal of Science and Healing*, *2*(10), 69-73.

Dowdall, G. W. (2012). *College Drinking: Reframing a Social Problem/changing the Culture*. Stylus Publishing, LLC.

Duffy, M. K., Scott, K. L., Shaw, J. D., Tepper, B. J., & Aquino, K. (2012). A social context model of envy and social undermining. *Academy of Management Journal*, *55*(3), 643-666.

Earleywine, M., LaBrie, J. W., & Pedersen, E. R. (2008). A brief Rutgers Alcohol Problem Index with less potential for bias. *Addictive behaviors*, *33*(9), 1249-1253.

Ellemers, N., & Jetten, J. (2013). The many ways to be marginal in a group. *Personality and Social Psychology Review*, *17*(1), 3-21.

Ellemers, N., van Nunspeet, F., & Scheepers, D. (2013). It's all in the mind: How social identification processes affect neurophysiological responses. *The mechanisms of social connection: From brain to group*, 373-390.

Eyal, N. & Luman, S. (2016). Getting over your fear of missing out. Retrieved January, 15, 1016, from http://www.nirandfar.com/2015/01/fomo.html

Flett, J. A., Riordan, B. C., Scarf, D., & Conner, T. S. (2015). The Young And The Reckless: Fear Of Missing Out, Alcohol Consumption And Negative Alcohol-related Consequences In University Students. *Drug and Alcohol Review*, *34*, 26.

Fox, E., Russo, R., Bowles, R., & Dutton, K. (2001). Do threatening stimuli draw or hold visual attention in subclinical anxiety?. *Journal of Experimental Psychology: General*, *130*(4), 681.

Franklin, S. B., Gibson, D. J., Robertson, P. A., Pohlmann, J. T., & Fralish, J. S. (1995). Parallel analysis: a method for determining significant principal components. *Journal of Vegetation Science*, *6*(1), 99-106.

Fromme, K., & D'Amico, E. J. (2000). Measuring adolescent alcohol outcome expectancies. *Psychology of Addictive Behaviors*, *14*(2), 206.

Fromme, K., Katz, E., & D'Amico, E. (1997). Effects of alcohol intoxication on the perceived consequences of risk taking. *Experimental and clinical psychopharmacology*, *5*(1), 14.

Fromme, K., Stroot, E. A., & Kaplan, D. (1993). Comprehensive effects of alcohol: Development and psychometric assessment of a new expectancy questionnaire. *Psychological Assessment*, *5*(1), 19.

Gardner, W. L., Pickett, C. L., & Brewer, M. B. (2000). Social exclusion and selective memory: How the need to belong influences memory for social events. *Personality and Social Psychology Bulletin*, *26*(4), 486-496.

Garson, G. D. (2015). *Missing Values Analysis and Data Imputation*. Asheboro, NC: Statistical Associates Publishers.

Gibbons, F. X., & Gerrard, M. (1997). *Health images and their effects on health behavior*. Lawrence Erlbaum Associates Publishers.

Gibbons, F. X., Gerrard, M., & Lane, D. J. (2003). A social reaction model of adolescent health risk. *Social psychological foundations of health and illness*, 107-136.

Greenbaum, P. E., Del Boca, F. K., Darkes, J., Wang, C. P., & Goldman, M. S. (2005). Variation in the drinking trajectories of freshmen college students. *Journal of consulting and clinical psychology*, *73*(2), 229.

Haden, T. L., & Edmundson, E. W. (1991). Personal and social motivations as predictors of substance use among college students. *Journal of drug education*, *21*(4), 303-312.

Harel, O., Zimmerman, R., & Dekhtyar, O. (2008). Approaches to the Handling of. *The SAGE Sourcebook of Advanced Data Analysis Methods for Communication Research*, 349.

Hasking, P., Lyvers, M., & Carlopio, C. (2011). The relationship between coping strategies, alcohol expectancies, drinking motives and drinking behaviour. *Addictive behaviors*, *36*(5), 479-487.

Hayes, A. F., Glynn, C. J., & Shanahan, J. (2005). Willingness to self-censor: A construct and measurement tool for public opinion research. *International Journal of Public Opinion Research*, *17*(3), 298-323.

Hayton, J. C., Allen, D. G., & Scarpello, V. (2004). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational research methods*, *7*(2), 191-205.

Hechter, M., & Opp, K. D. (Eds.). (2001). *Social norms*. Russell Sage Foundation.

Hingson, R. W., Zha, W., & Weitzman, E. R. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among US college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol and Drugs, Supplement*, (16), 12-20.

Hingson, R., Heeren, T., Winter, M., & Wechsler, H. (2005). Magnitude of alcohol-related mortality and morbidity among US college students ages 18-24: Changes from 1998 to 2001. *Annu. Rev. Public Health*, *26*, 259-279.

Hinkin, T. R., Tracey, J. B., & Enz, C. A. (1997). Scale construction: Developing reliable and valid measurement instruments. *Journal of Hospitality & Tourism Research*, *21*(1), 100-120.

Hogg, M. A., CooperShaw, L., & Holzworth, D. W. (1993). Group prototypically and depersonalized attraction in small interactive groups. *Personality and Social Psychology Bulletin*, *19*(4), 452-465.

Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Articles*, 2.

Houston, M. B., & Walker, B. A. (1996). Self-relevance and purchase goals: mapping a consumer decision. *Journal of the Academy of Marketing Science*, *24*(3), 232-245.

Hox, J. J., & Bechger, T. M. (1998). An introduction to structural equation modelling. *Family Science Review*, *11*(354-373).

Ibáñez, M. I., Camacho, L., Mezquita, L., Villa, H., Moya-Higueras, J., & Ortet, G. (2015). Alcohol expectancies mediate and moderate the associations between big five personality traits and adolescent alcohol consumption and alcohol-related problems. *Frontiers in psychology*, *6*.

Jaccard, J., & Wan, C. K. (1995). Measurement error in the analysis of interaction effects between continuous predictors using multiple regression: Multiple indicator and structural equation approaches. *Psychological bulletin*, *117*(2), 348.

Jacob, T., & Leonard, K. (1994). Family and peer influences in the development of adolescent alcohol abuse. In *The development of alcohol problems: Exploring the biopsychosocial matrix of risk* (Vol. 26, pp. 123-155). Department of Health and Human Services Rockville, MD.

Jacobson, R. P., Mortensen, C. R., & Cialdini, R. B. (2011). Bodies obliged and unbound: differentiated response tendencies for injunctive and descriptive social norms. *Journal of personality and social psychology*, *100*(3), 433.

Jang, W. E., Ko, Y. J., Morris, J. D., & Chang, Y. (2015). Scarcity Message Effects on Consumption Behavior: Limited Edition Product Considerations. *Psychology & Marketing*, *32*(10), 989-1001.

Jansen, W. S., Otten, S., & van der Zee, K. I. (2015). Being part of diversity. The effects of an all-inclusive multicultural diversity approach on majority members' perceived inclusion and support for organizational diversity efforts. *Group Processes & Intergroup Relations*, 1368430214566892.

Jansen, W. S., Otten, S., van der Zee, K. I., & Jans, L. (2014). Inclusion: Conceptualization and meas- urement. *European Journal of Social Psychology*, *44*(4), 370–385. doi:10.1002/ejsp.2011

John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. *Handbook of personality: Theory and research*, *2*(1999), 102-138.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2010). Monitoring the Future: National Survey Results on Drug Use, 1975-2009. Volume I: Secondary School Students. NIH Publication No. 10-7584. *National Institute on Drug Abuse (NIDA)*.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2013). Monitoring the future national results on drug use: 2012 overview, key findings on adolescent drug use. *Ann Arbor: Institute for Social Research, The University of Michigan*, *168*.

Jones, B. T., & McMahon, J. (1994). Negative and positive alcohol expectancies as predictors of abstinence after discharge from a residential treatment program: a one-month and three-month follow-up study in men. *Journal of Studies on Alcohol*, *55*(5), 543-548.

Jones, B. T., Corbin, W., & Fromme, K. (2001). A review of expectancy theory and alcohol consumption. *Addiction*, *96*(1), 57-72.

Kilmer, J. R., Cronce, J. M., & Larimer, M. E. (2014). College student drinking research from the 1940s to the future: where we have been and where we are going. *Journal of studies on alcohol and drugs. Supplement*, *75*(Suppl 17), 26.

Kim, M. G., & Kim, J. (2010). Cross-validation of reliability, convergent and discriminant validity for the problematic online game use scale. *Computers in Human Behavior*, *26*(3), 389-398.

Labbe, A. K., & Maisto, S. A. (2011). Alcohol expectancy challenges for college students: A narrative review. *Clinical psychology review*, *31*(4), 673-683.

LaBrie, J., Lamb, T., & Pedersen, E. (2008). Changes in drinking patterns across the transition to college among first-year college males. *Journal of child & adolescent substance abuse*, *18*(1), 1-15.

Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the need to belong scale: Mapping the nomological network. *Journal of personality assessment*, *95*(6), 610-624.

Ledesma, R. D., & Valero-Mora, P. (2007). Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out parallel analysis. *Practical assessment, research & evaluation*, *12*(2), 1-11.

Lee, C. M., Atkins, D. C., Cronce, J. M., Walter, T., & Leigh, B. C. (2015). A daily measure of positive and negative alcohol expectancies and evaluations: Documenting a two-factor structure and within-and between-person variability. *Journal of studies on alcohol and drugs*, *76*(2), 326-335.

Lee, N. K., Greely, J., & Oei, T. P. (1999). The relationship of positive and negative alcohol expectancies to patterns of consumption of alcohol in social drinkers. *Addictive behaviors*, *24*(3), 359-369.

Leeman, R. F., Toll, B. A., Taylor, L. A., & Volpicelli, J. R. (2009). Alcohol-induced disinhibition expectancies and impaired control as prospective predictors of problem drinking in undergraduates. *Psychology of Addictive Behaviors*, *23*(4), 553.

Leigh, B. C. (1989). In search of the Seven Dwarves: issues of measurement and meaning in alcohol expectancy research. *Psychological bulletin*, *105*(3), 361.

Li, H. K., & Dingle, G. A. (2012). Using the Drinking Expectancy Questionnaire (revised scoring method) in clinical practice. *Addictive behaviors*, *37*(2), 198-204.

Little, T. D., Lindenberger, U., & Nesselroade, J. R. (1999). On selecting indicators for multivariate measurement and modeling with latent variables: When" good" indicators are bad and" bad" indicators are good. *Psychological Methods*, *4*(2), 192.

Loewenstein, G., O'Donoghue, T., & Bhatia, S. (2015). Modeling the interplay between affect and deliberation. *Decision*, *2*(2), 55.

Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the" porcupine problem.". *Journal of personality and social psychology*, *92*(1), 42.

Maslowsky, J., Jager, J., & Hemken, D. (2014). Estimating and interpreting latent variable interactions A tutorial for applying the latent moderated structural equations method. *International journal of behavioral development*, 0165025414552301.

McBride, N. M., Barrett, B., Moore, K. A., & Schonfeld, L. (2014). The role of positive alcohol expectancies in underage binge drinking among college students. *Journal of American College Health*, *62*(6), 370-379.

Meisel, S. N., Colder, C. R., & Hawk, L. W. (2015). The moderating role of cognitive capacities in the association between social norms and drinking behaviors. *Alcoholism: clinical and experimental research*, *39*(6), 1049-1056.

Merrill, J. E., Lopez-Vergara, H. I., Barnett, N. P., & Jackson, K. M. (2016). Hypothetical evaluations of positive and negative alcohol consequences in adolescents across various levels of drinking experience. *Psychology of addictive behaviors*, *30*(8), 811.

Moeller, S. J., & Crocker, J. (2009). Drinking and desired self-images: path models of self-image goals, coping motives, heavy-episodic drinking, and alcohol problems. *Psychology of Addictive Behaviors*, *23*(2), 334.

Mueller, R. O., & Hancock, G. R. (2008). Best practices in structural equation modeling. *Best practices in quantitative methods*, 488-508.

Mussweiler, T., Rüter, K., & Epstude, K. (2004). The ups and downs of social comparison: mechanisms of assimilation and contrast. *Journal of personality and social psychology*, *87*(6), 832.

Muthén, B. & Asparouhov, T. (2015). Latent variable interactions. Technical note, Retrieved October 9, 2016 from https://www.statmodel.com/download/LVinteractions.pdf.

Muthén, L.K. and Muthén, B.O. (1998-2012). Mplus User's Guide. Seventh Edition. Los Angeles, CA: Muthén & Muthén.

Nagpal, M. (2014). How to use urgency and scarcity principles to increase ecommerce sales. Retrieved Feb. 3rd, 2016, from https://vwo.com/blog/use-urgency-scarcity-increase-ecommerce-sales/

National Center on Addiction and Substance Abuse (CASA), at Columbia University, & Califano, J. A. (2007). *Wasting the best and the brightest: substance abuse at america's colleges and universities*. CASA.

Neighbors, C., LaBrie, J. W., Hummer, J. F., Lewis, M. A., Lee, C. M., Desai, S., Kilmer, J., & Larimer, M. E. (2010). Group identification as a moderator of the relationship between perceived social norms and alcohol consumption. *Psychology of Addictive Behaviors*, *24*(3), 522.

Neighbors, C., Larimer, M. E., & Lewis, M. A. (2004). Targeting misperceptions of descriptive drinking norms: efficacy of a computer-delivered personalized normative feedback intervention. *Journal of consulting and clinical psychology*, *72*(3), 434.

Neighbors, C., Lee, C. M., Lewis, M. A., Fossos, N., & Larimer, M. E. (2007). Are Social Norms the Best Predictor of Outcomes Among Heavy-Drinking College Students? *Journal of Studies on Alcohol and Drugs*, *68*(4), 556–565.

Neighbors, C., Lewis, M. A., Bergstrom, R. L., & Larimer, M. E. (2006). Being controlled by normative influences: self-determination as a moderator of a normative feedback alcohol intervention. *Health psychology*, *25*(5), 571.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation and Computers, 32,* 396-402.

Office of the Surgeon General. (2007). The Surgeon General's call to action to prevent and reduce underage drinking. *Rockville, MD: Office of the Surgeon General, Department of Health and Human Services*.

Oster-Aaland, L., Lewis, M. A., Neighbors, C., Vangsness, J., & Larimer, M. E. (2009). Alcohol poisoning among college students turning 21: Do they recognize the symptoms and how do they help?. *Journal of Studies on Alcohol and Drugs, Supplement*, (16), 122-130.

Patrick, M. E., & Maggs, J. L. (2011). College students' evaluations of alcohol consequences as positive and negative. *Addictive behaviors*, *36*(12), 1148-1153.

Patrick, M. E., Cronce, J. M., Fairlie, A. M., Atkins, D. C., & Lee, C. M. (2016). Day-to-day variations in high-intensity drinking, expectancies, and positive and negative alcohol-related consequences. *Addictive behaviors*, *58*, 110-116.

Patrick, M. E., Wray-Lake, L., Finlay, A. K., & Maggs, J. L. (2010). The long arm of expectancies: Adolescent alcohol expectancies predict adult alcohol use. *Alcohol and Alcoholism*, *45*(1), 17-24.

Perkins, H. W. (2002). Surveying the damage: A review of research on consequences of alcohol misuse in college populations. *Journal of Studies on Alcohol, supplement*, (14), 91-100.

Perkins, H. W., & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: some research implications for campus alcohol education programming. *International journal of the Addictions*, *21*(9-10), 961-976.

Perkins, H. W., & Wechsler, H. (1996). Variation in perceived college drinking norms and its impact on alcohol abuse: A nationwide study. *Journal of Drug Issues*, *26*(4), 961-974.

Perkins, H. W., Haines, M. P., & Rice, R. (2005). Misperceiving the college drinking norm and related problems: a nationwide study of exposure to prevention information, perceived norms and student alcohol misuse. *Journal of studies on alcohol*, *66*(4), 470-478.

Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, *30*(9), 1095-1107.

Pomery, E. A., Gibbons, F. X., Reis-Bergan, M., & Gerrard, M. (2009). From willingness to intention: Experience moderates the shift from reactive to reasoned behavior. *Personality and Social Psychology Bulletin*.

Porter, S. R., & Pryor, J. (2007). The effects of heavy episodic alcohol use on student engagement, academic performance, and time use. *Journal of College Student Development*, *48*(4), 455-467.

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, *29*(4), 1841-1848.

Raubenheimer, J. (2004). An item selection procedure to maximise scale reliability and validity. *SA Journal of Industrial Psychology*, *30*(4).

Read, J. P., Wardell, J. D., & Bachrach, R. L. (2013). Drinking consequence types in the first college semester differentially predict drinking the following year. *Addictive behaviors*, *38*(1), 1464-1471.

Read, J. P., Wardell, J. D., & Bachrach, R. L. (2013). Drinking consequence types in the first college semester differentially predict drinking the following year. *Addictive behaviors*, *38*(1), 1464-1471

Reagle, J. (2015). Following the Joneses: FOMO and conspicuous sociality. *First Monday*, *20*(10).

Reed, M. B., Lange, J. E., Ketchie, J. M., & Clapp, J. D. (2007). The relationship between social identity, normative information, and college student drinking. *Social Influence*, *2*(4), 269-294.

Rimal, R. N. (2008). Modeling the Relationship Between Descriptive Norms and Behaviors: A Test and Extension of the Theory of Normative Social Behavior (TNSB)∗. *Health Communication*, *23*(2), 103-116.

Rosen, L. D., Whaling, K., Carrier, L. M., Cheever, N. A., & Rokkum, J. (2013). The media and technology usage and attitudes scale: An empirical investigation. *Computers in human behavior*, *29*(6), 2501-2511.

Rubin, D. B. (1996). Multiple imputation after 18+ years. *Journal of the American statistical Association*, *91*(434), 473-489.

Saft, J. (2015, May 29). The power of fear of missing out. Retrieved October 23, 2015, from http://blogs.reuters.com/james-saft/2015/05/29/the-power-of-the-fear-of-missing-out/

Sanz, A, September 30, 2015, answer on the question, "What is the psychology behind FOMO?," Qurora, October 14, 2016, http://www.slate.com/blogs/quora/2015/09/30/fomo_what_s_the_psychology_behind_the_fear_of_missing_out.html

Schmitt, T. A. (2011). Current methodological considerations in exploratory and confirmatory factor analysis. *Journal of Psychoeducational Assessment*, *29*(4), 304-321.

Schueler, K. R. (2008). *Factors Affecting Consumers' Responses to Direct-to-Consumer Advertising*. ProQuest.

Schulenberg, J. E., & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol, Supplement*, (14), 54-70.

Scott-Sheldon, L. A., Carey, K. B., Elliott, J. C., Garey, L., & Carey, M. P. (2014). Efficacy of alcohol interventions for first-year college students: a meta-analytic review of randomized controlled trials. *Journal of consulting and clinical psychology*, *82*(2), 177.

Segars, A. H. (1997). Assessing the unidimensionality of measurement: A paradigm and illustration within the context of information systems research. *Omega*, *25*(1), 107-121.

Sher, K. J., & Rutledge, P. C. (2007). Heavy drinking across the transition to college: Predicting first-semester heavy drinking from precollege variables. *Addictive behaviors*, *32*(4), 819-835.

Singleton, R. A., & Wolfson, A. R. (2009). Alcohol consumption, sleep, and academic performance among college students. *Journal of Studies on Alcohol and Drugs*, *70*(3), 355-363.

Smith, R. H., & Kim, S. H. (2007). Comprehending envy. *Psychological bulletin*, *133*(1), 46.

Stacy, A. W., Widaman, K. F., & Marlatt, G. A. (1990). Expectancy models of alcohol use. *Journal of personality and social psychology*, *58*(5), 918.

Stapel, D. A., & Koomen, W. (2001). I, we, and the effects of others on me: how self-construal level moderates social comparison effects. *Journal of personality and social psychology*, *80*(5), 766.

Stoddard, S. A., Bauermeister, J. A., Gordon-Messer, D., Johns, M., & Zimmerman, M. A. (2012). Permissive norms and young adults' alcohol and marijuana use: The role of online communities. *Journal of Studies on Alcohol and Drugs*, *73*(6), 968-975.

Tabachnick, B. G., & Fidell, L. S. (2001). Principal components and factor analysis. *Using multivariate statistics*, *4*, 582-633.

Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. *Advances in experimental social psychology*, *21*, 181-227.

Vander Ven, T. (2011). *Getting wasted: Why college students drink too much and party so hard*. NYU Press.

Vaughn, J. (2012). FOMO [Powerpoint slides]. Retrieved from http://www.slideshare.net/jwtintelligence/the-fear-of-missing-out-fomo-march-2012-update

Wechsler, H., & Nelson, T. F. (2008). What we have learned from the Harvard School of Public Health College Alcohol Study: Focusing attention on college student alcohol consumption and the environmental conditions that promote it. *Journal of Studies on alcohol and Drugs*, *69*(4), 481-490.

Werner, C., & Schermelleh-Engel, K. (2010). Introduction to structural equation modeling with LISREL. *Goethe University, Frankfurt. Retrieved on February*, *5*, 2011.

Werner, M. J., Walker, L. S., & Greene, J. W. (1993). Alcohol expectancies, problem drinking, and adverse health consequences. *Journal of Adolescent Health*, *14*(6), 446-452.

Wheeler, L., & Suls, J. (2007). Assimilation in social comparison: Can we agree on what it is?. *Revue internationale de psychologie sociale*, *20*(1), 31-51.

White, A., & Hingson, R. (2014). The burden of alcohol use: Excessive alcohol consumption and related consequences among college students. *Alcohol research: current reviews*, *35*(2), 201.

White, H. R., & Labouvie, E. W. (1989). Towards the assessment of adolescent problem drinking. *Journal of studies on alcohol*, *50*(1), 30-37.

Whitt, E. J., Park, S., Goodman, K. M., Seifert, T. A., Pascarella, E. T., & Tagliapietra-Nicoli, G. (2007). College student binge drinking and academic achievement: A longitudinal replication and extension. *Journal of College Student Development*, *48*(6), 715-727.

Yong, A. G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. *Tutorials in Quantitative Methods for Psychology*, *9*(2), 79-94.

Yuan, Y. C. (2010). Multiple imputation for missing data: Concepts and new development (Version 9.0). *SAS Institute Inc, Rockville, MD*, *49*.

Zaichkowsky, J. L. (1985). Measuring the involvement construct. *Journal of consumer research*, 341-352.

Zamboanga, B. L., Schwartz, S. J., Ham, L. S., Borsari, B., & Van Tyne, K. (2010). Alcohol expectancies, pregaming, drinking games, and hazardous alcohol use in a multiethnic sample of college students. *Cognitive Therapy and Research*, *34*(2), 124-133.

Zhang, J., Bray, B. C., Zhang, M., & Lanza, S. T. (2015). Personality profiles and frequent heavy drinking in young adulthood. *Personality and individual differences*, *80*, 18-21.

Appendix A

ALFOMO, Alcohol Positive Expectancies, and Binge Drinking Intentions

This section presents additional analyses of the specific alcohol positive expectancies (i.e. sociability, sexuality, courage, and tension reduction expectancies) in relation to ALFOMO and binge drinking intentions. In addition to simplicity, modeling the individual subscales has the additional advantages of minimizing multi-collinearity, that was evident when testing multiple scales in the same models, and examining the differential impact of each of the subscales.

1. ALFOMO and Sociability Expectancies

Testing the mediation model with the sociability five items, which had factor loadings ranging between .76 to .87, resulted in a very good model fit, MLMχ^2(781) = 1215.003, p < .001, SCF = 1.1224, RMSEA = .044 (90% CI = .039, .049, p =.981), CFI = .950, TLI = .945, SRMR =.072. Social expectancy likelihood predicted drinking willingness via a direct and two indirect paths (see *Figure A.1.1*). ALFOMO significantly mediated the effects of sociability expectancies likelihood (*B* = .169, *SE* =.036, *p*<.001, [95%CI = .106, .247]) and past heavy drinking (*B* = .147, *SE* =.031, *p*<.001, [95%CI = .094, .219]) on binge drinking willingness. Additionally, the sociability expectancies likelihood increased binge drinking likelihood via the serial mediation of ALFOMO and binge drinking willingness (*B* =.109, *SE* = .029, *p* <.01, [95%CI = .058, .170]). Moreover, sociability expectancies likelihood significantly mediated the effect of past heavy drinking on sociability expectancies evaluation *B* = .271, *SE* =.061, *p*<.01, [95%CI = .152, .381]). Sociability expectancy evaluations (i.e. SocExEva), in turn, significantly mediated the effect of sociability expectancies likelihood on binge drinking willingness.

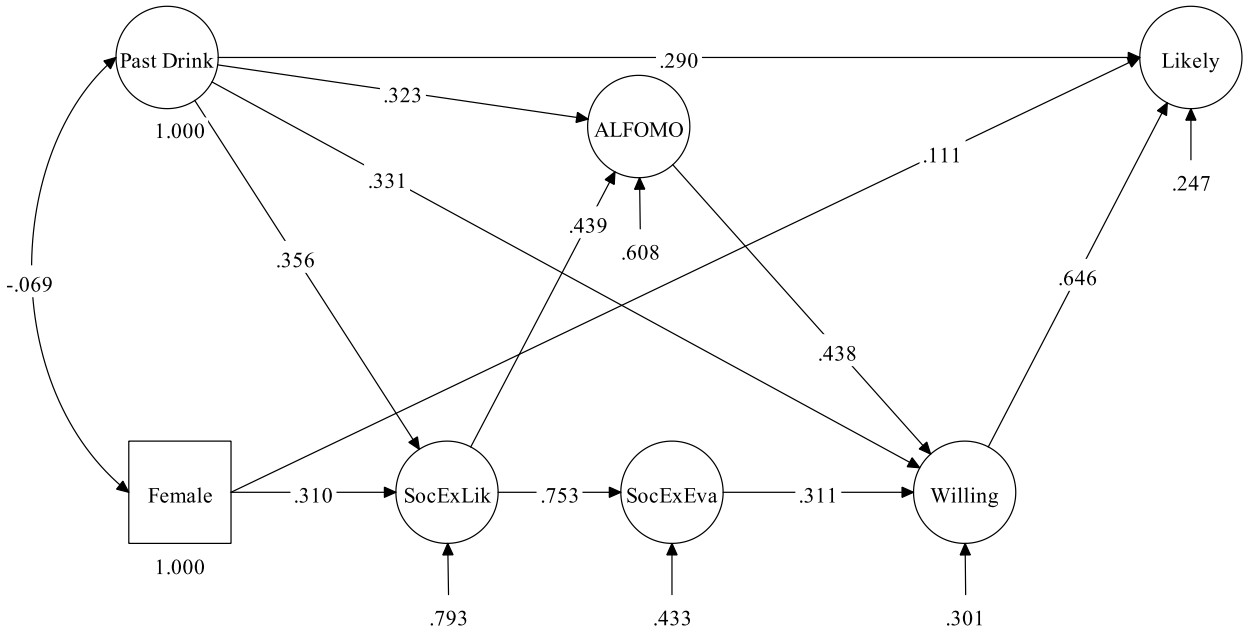

Figure A.1.1. Sociability Expectancies Likelihood (SocExpLik) and Evaluation (SocExpEva), ALFOMO, and Binge Drinking Intentions (i.e. Willing & Likely)

The interaction between the likelihood and evaluations of social expectancies was significant in positively predicting ALFOMO (*B* = .108, *SE*= .041, *p* <.01, [95%CI = 0.02, 0.182]). The log-likelihood ratio test was significant, *D* =3577.21, at *p* <.01, indicating that the interaction terms significantly improved the model fit. See *Figure A.1.2* and *Figure A.1.3* for the interaction effect on ALFOMO. As can be seen in the figures, the positive association between sociability expectancies likelihood and ALFOMO increases as the favorability ratings of sociability expectancies increase.

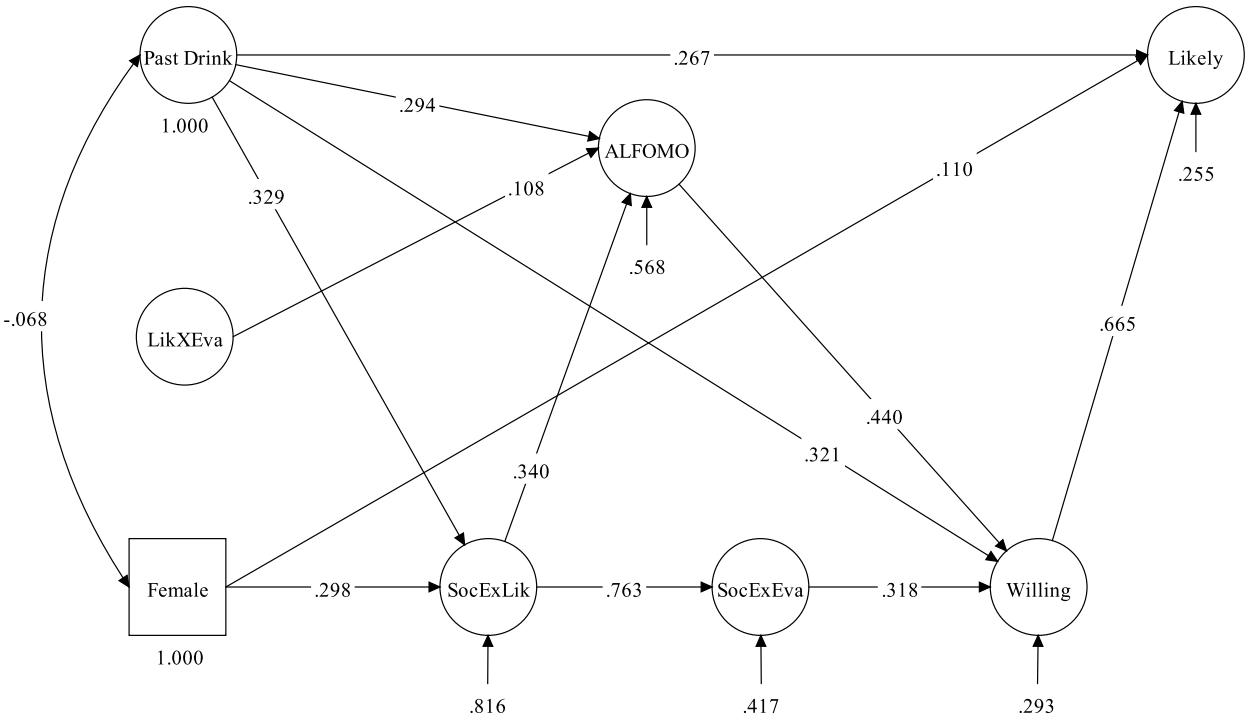

Figure A.1.2. The Interaction Effect of Sociability Expectancies Evaluations on The Relationship Between Positive Expectancies Likelihood and ALFOMO

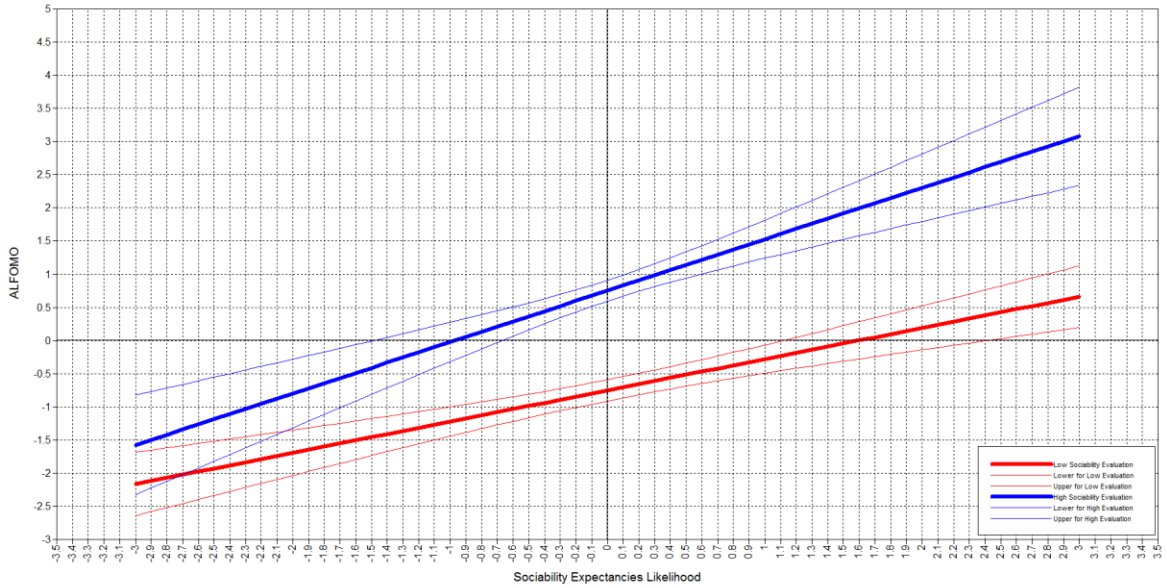

Figure A.1.3. The Moderating Effect of Sociability Expectancies Evaluations on The Relationship Between Positive Expectancies Likelihood and ALFOMO

2. ALFOMO and Sexuality Expectancies

Testing the mediation model with the sexuality three items, which had factor loadings ranging between .46 to .81, resulted in a very good model fit, MLMχ2(626) = 972.043, p < .001, SCF = 1.2784, RMSEA = .044 (90% CI = .038, .049, p =.977), CFI = .949, TLI = .943, SRMR =.069. As expected, sexuality expectancy likelihood increased willingness to binge drink via the mediation of ALFOMO, B = .092, SE =.040, p <.05, [95% CI=.027, .209] (see *Figure A.2.1*). In line with previous findings, perceived sexual expectancy evaluations predicted binge drinking willingness. However, sexuality expectancy evaluation failed to significantly moderate the positive associations that links sexuality expectancy likelihood with ALFOMO and binge drinking intentions.

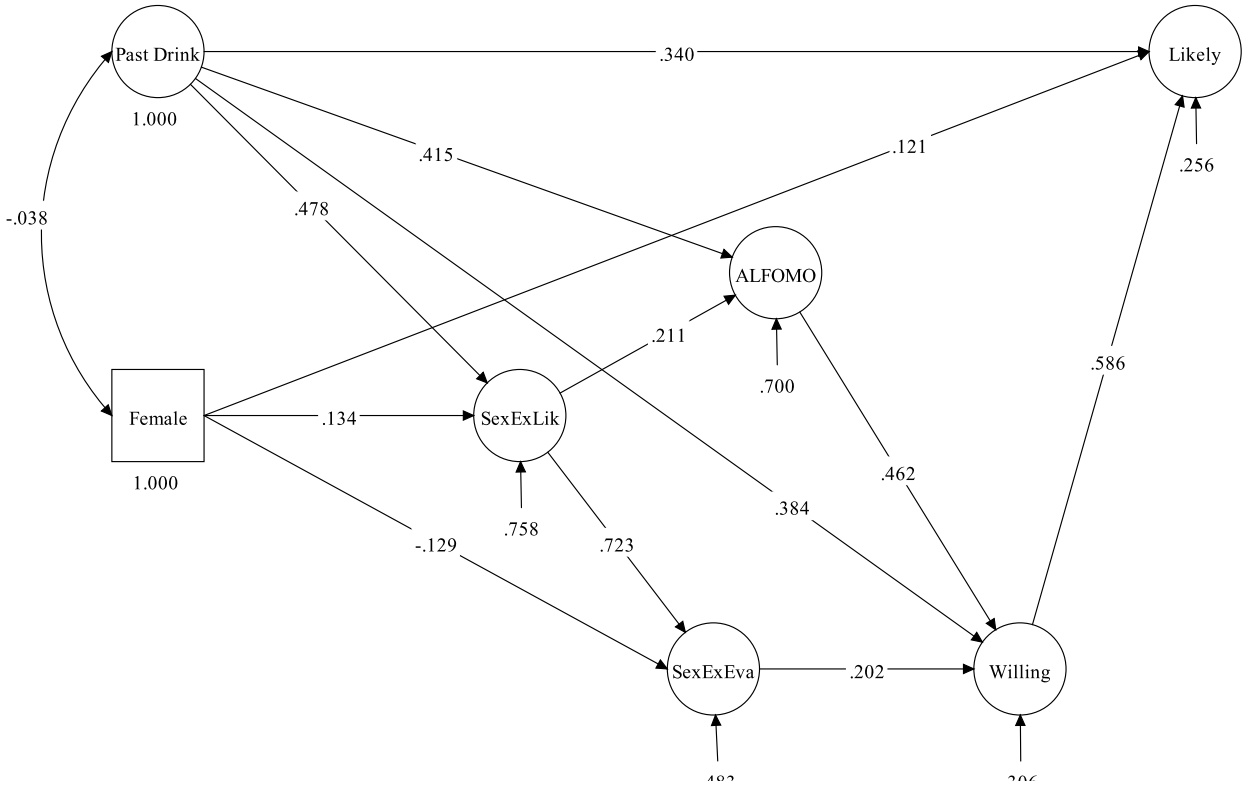

Figure A.2.1. Sexuality Expectancies Likelihood (Sex. Lik.) and Evaluation (Sex. Eval.), ALFOMO, and Binge Drinking Intentions (Willing & Likely)

3. ALFOMO and Courage Expectancies

Testing the mediation model with the courage expectancies three items, which had factor loadings ranging between .75 to .86, resulted in a very good model fit, MLMχ2(629) = 985.464, p < .001, SCF = 1.2872, RMSEA = .043 (90% CI = .038, .048, p =.985), CFI = .950, TLI = .944, SRMR =.072 (see *Figure A.3.1*). ALFOMO significantly mediated the effect of perceived likelihood of courage expectancies (*B* = .158, *SE*= .027, p <.001, [95% CI = 107, .219]) and past heavy drinking (*B* = .225, *SE*= .034, p <.001, [95% CI = 167, .303]) on binge drinking willingness. Additionally, courage expectancies likelihood increased binge drinking likelihood via the serial mediation of ALFOMO and binge drinking willingness, *B*=.135, *SE*=.026, p <.001, [95% CI =.092, .195]. Participants who expected alcohol to make them more courageous experienced more alcohol-related FOMO and, subsequently, showed more tendencies for future binge drinking. Courage expectancy evaluations also predicted drinking intentions, but failed to moderate the positive effect of courage expectancy evaluations on ALFOMO and binge drinking intentions.

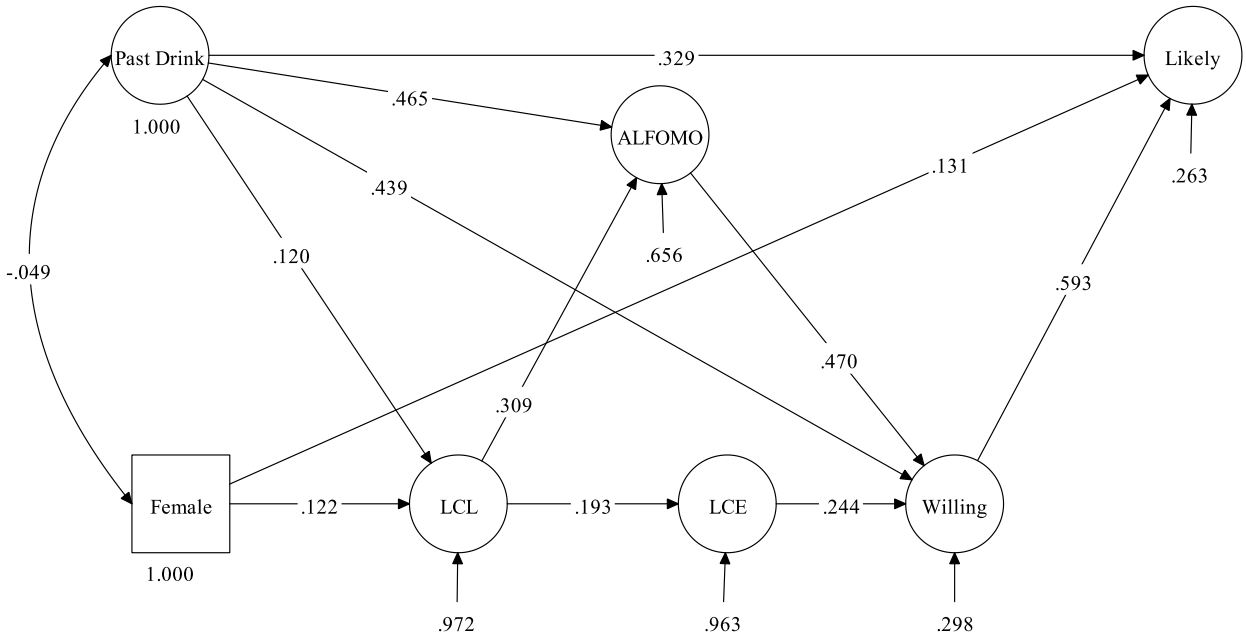

Figure A.3.1. Courage Expectancies Likelihood (LCL) and Evaluation (LCE), ALFOMO, and Binge Drinking Intentions (Willing & Likely)

4. ALFOMO and Tension Reduction Expectancies

Testing the mediation model with the tension reduction expectancies three items, which had factor loadings ranging between .66 to .83, resulted in a very good model fit, MLMχ^2(630) = 987.778, p < .001, SCF = 1.2807, RMSEA = .044 (90% CI = .038, .049, p =.976), CFI = .950, TLI = .944, SRMR =.070 (see *Figure A.4.1*). ALFOMO mediated the effect of tension reduction expectancies likelihood (*B* = .080, *SE*= .028, p <.01, [95% CI = .033, .144]) and past heavy drinking (*B* = .212, *SE*= .036, p <.01, [95% CI = .150, .294]) on binge drinking willingness. Additionally, tension reduction expectancies likelihood slightly increased binge drinking likelihood via the serial mediation of ALFOMO and willingness (*B* =.126, *SE*=.027, p <.01, [95% CI = .081, .188]). In line with previous models, perceived evaluation of tension reduction expectancy also predicted willingness to binge drink. However, those perceived evaluations

failed to moderate the positive effect of courage expectancy evaluations on ALFOMO and binge drinking intentions.

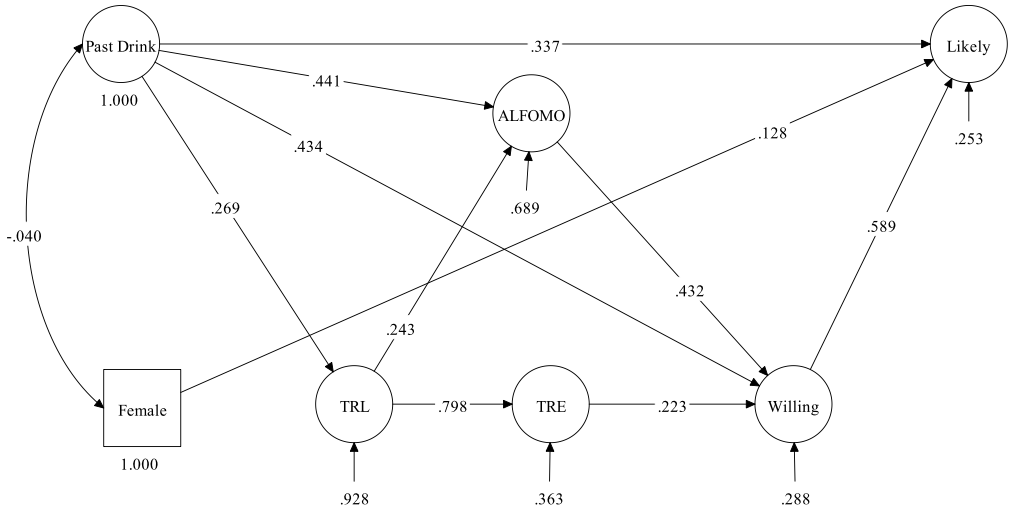

Figure A.4.1. Tension Reduction Expectancies Likelihood (TRL) and Evaluation (TRE), ALFOMO, and Binge Drinking Intentions (Willing & Likely).
(N = 296)

Appendix B

ALFOMO, Alcohol Negative Expectancies, and Binge Drinking Intentions

This section presents additional analyses of the specific alcohol negative expectancies (i.e. impairment, aggression, and self-perception expectancies) in relation to ALFOMO and binge drinking intentions.

1. ALFOMO and Impairment Expectancies

Testing the mediation model with the impairment expectancies five items, which had factor loadings ranging between .61 to .80, yielded a very good fit, MLM$\chi^2(592) = 928.072$, $p <$ .001, SCF = 1.1823, RMSEA = .044 (90% CI = .038, .049, p=.969), CFI = .952, TLI = .946, SRMR =.071. A multi-group analysis was conducted to examine gender effects (see Table B.1.1). The multi-group test resulted in two models where gender moderated four paths (see *Figures B.1.1 & B.1.2*, the red lines reflect paths that are only significant among females and blue lines reflect paths that are only significant among males). As can be seen in the models, ALFOMO is slightly associated with more perceived likelihood of impairment among males and females. Moreover, perceived likelihood of impairment expectancies significantly increased binge drinking willingness among males. Past heavy drinking decreased the perceived severity of impairment expectancies, which in turn, decreased binge drinking willingness among both genders, but slightly increased binge drinking likelihood among males. Tests of mediation indicated that the only significant indirect effect was the effect of past heavy drinking on willingness via perceived evaluation of impairment expectancies among males, B = .124, SE= .061, p <.05, [95% CI= .004, .244].

Table B.1.1

Impairment Expectancies: A Multi-Group Analysis of Invariance

Model		MLMχ^2	df	SCF	RM	CFI	TLI	SR	MLM$\Delta\chi^2$	df	p.	Std Est. (SE)
Baseline Models	Male	1200.690	821	1.0838	.066	.899	.889	.097				
	Female	1145.340	822	1.1158	.045	.939	.933	.074				
Configuaral Model		2341.329	1640	1.1000	.054	.923	.815	.078				
Factor Loading Invariance		2443.638	1685	1.1052	.055	.916	.910	.104	96.7373	45	<.01	
	Relaxed Eq. Cons.:											
	1. Willing by Willing1	2433.713	1684	1.1046	.055	.917	.911	.101	5.8751	1	<.01	M=.747(.023) F= .770 (.024)
Residual Covariance Invariance		2496.639	1698	1.1105	.056	.912	.906	.118	46.280	14	<.01	
	Relaxed Eq. Cons.:											
	1. Drink3 with Drink1	2489.114	1697	1.1102	.056	.913	.907	.117	5.6207	1	<.01	M=.719(.045) F= .469 (.065)
Intercepts Invariance		2569.842	1740	1.1076	.057	.909	.905	.120	82.5308	43	<.01	
	Relaxed Eq. Cons.:											
	1. AF5 (ALFOMO 5)	2561.849	1739	1.1076	.056	.909	.906	.120	7.9930	1	<.01	M = 1.438 (.076) F = 1.385 (.055)
	2. AF16 (ALFOMO 16)	2555.304	1738	1.1077	.056	.910	.906	.120	7.4895	1	<.01	M = 1.349 (.066) F =1.599 (.069)
	3. Willing1	2548.401	1737	1.1077	.056	.911	.907	.120	6.9030	1	<.01	M = 1.171 (.062) F =1.583 (.057)
	5. Drink1	2544.579	1736	1.1078	.056	.911	.907	.119	4.2599	1	<.05	M = .881 (.055) F =.780 (.033)
Means Invariance (all means freely estimated)		2486.526	1728	1.1078	.054	.916	.913	.093	58.0530	8	<.01	
	Relaxed Eq. Cons.:											
	1. ImpExLik. (IEL) 2. Likely (Beh. Int.)	2511.07	1734	1.1076	.055	.914	.911	.140	25.4168	6	<.01	IEL: F =.383 (.143), p<.01 Likely: F =.273 (.102), p<.01

Note. SCF = Scaling Correction Factor, RM. = RMSEA, SR. = SRMR, Std Est (SE) = standardized estimates (standard error), M = Male's Mean, F = Female's Mean.

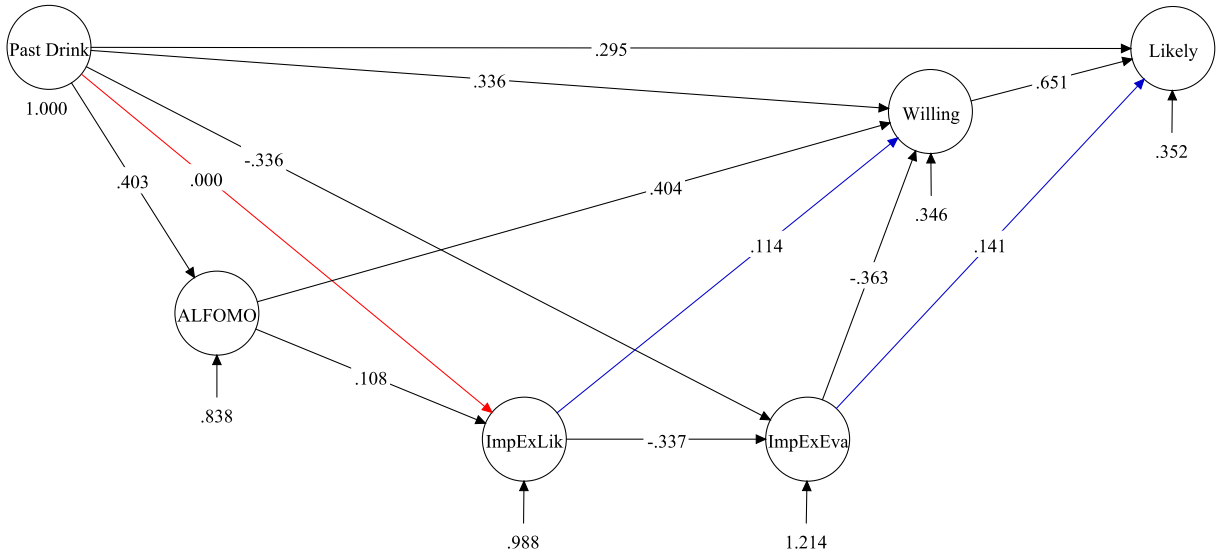

Figure B.1.1. ALFOMO, Alcohol Impairment Expectancies, & Binge Drinking Intentions (Males, N =105).

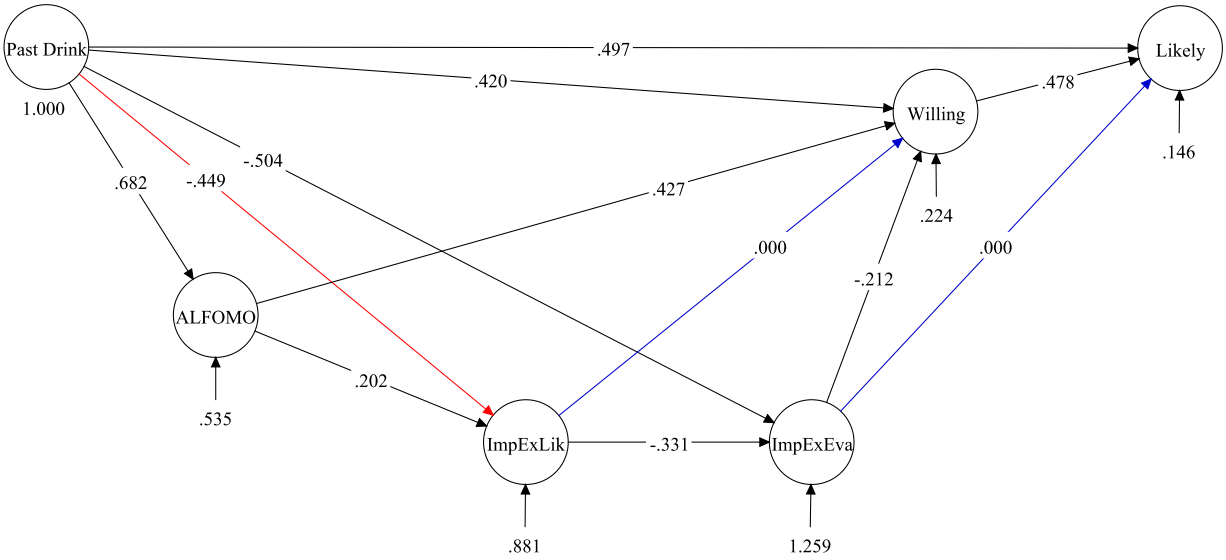

Figure B.1.2. ALFOMO, Alcohol Impairment Expectancies, & Binge Drinking Intentions (Females, N =192).

An Alternative Model. An alternative model was tested using the same rationale for positive expectancies (see *Figure B.1.3*), resulting in an acceptable model fit, MLMχ^2(871) = 1461.214, p < .001, SCF = 1.2564, RMSEA = .048 (90% CI = .043, .052, p=.804), CFI = .925, TLI = .918, SRMR =.090. An interaction term between likelihood and evaluation of negative expectancies was computed using the XWITH command and added to the model. As can be seen in Figure

B.1.4., the interaction significantly predicts ALFOMO. See Figure B.1.5. for the interaction plots.

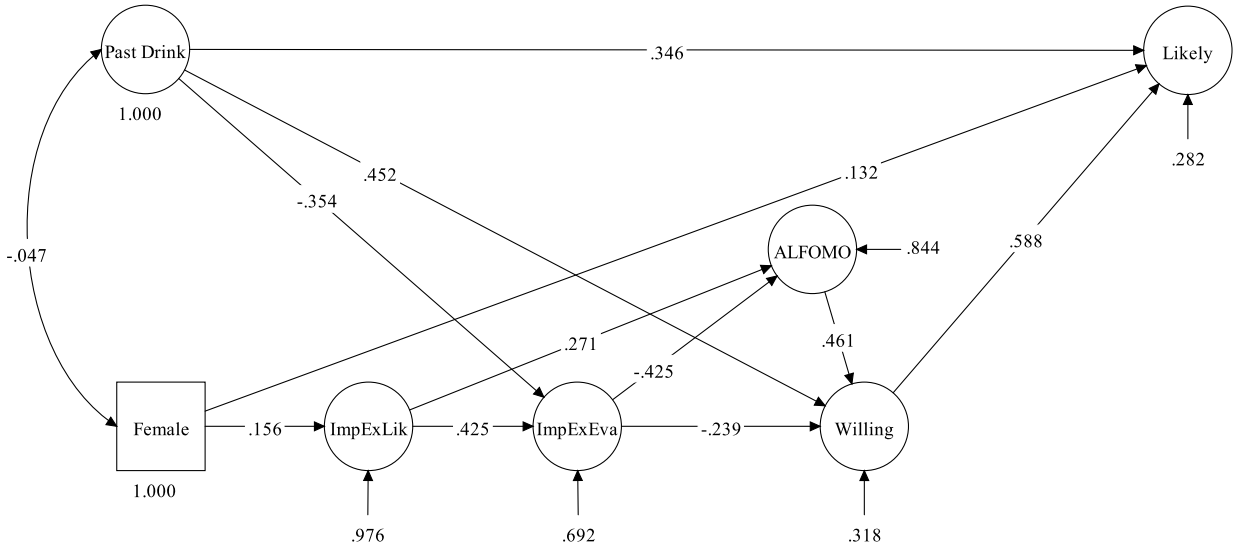

Figure B.1.3. ALFOMO, Alcohol Impairment Expectancies, & Binge Drinking Intentions: An Alternative Model

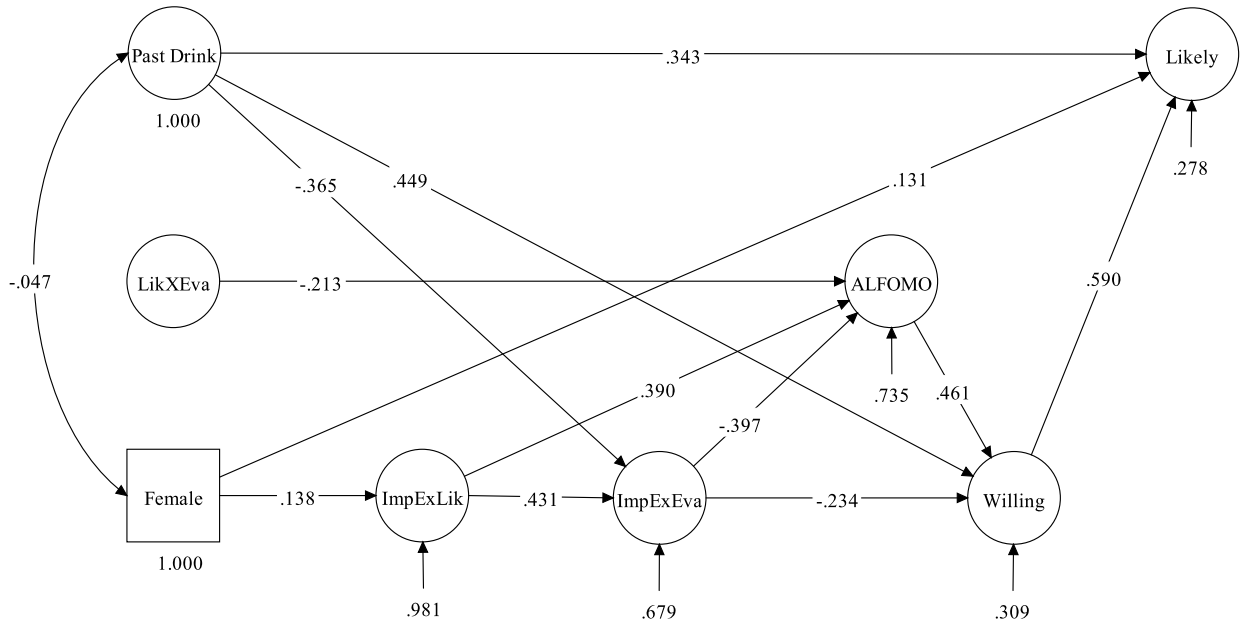

Figure B.1.4. The Interaction Between Impairment Expectancies Likelihood (ImpExLik) and Evaluation (ImExEva) on ALFOMO.

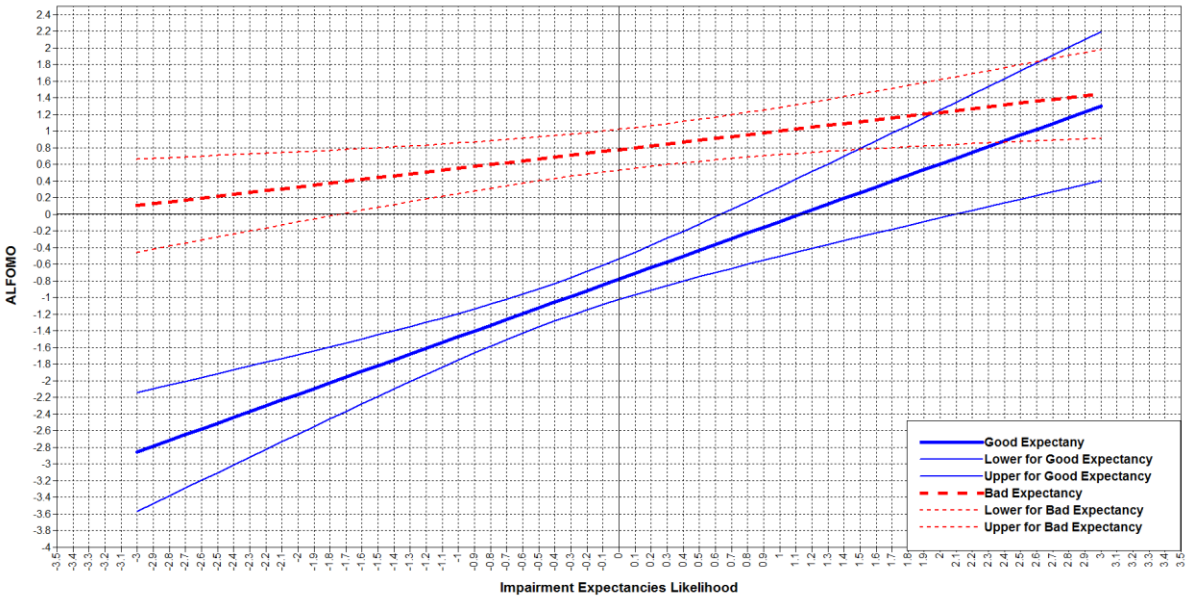

Figure B.1.5. The Moderating Effect of Impairment Expectancies Evaluation (Severity) on the Relationship Between Impairment Expectancies Likelihood and Binge Drinking Willingness

2. ALFOMO and Aggression Expectancies

Testing the mediation model with the aggression expectancies three items, which had factor loadings ranging between .53 to .88, resulted in a good fit, MLM$\chi^2(1271) = 1922.829$, $p <$ .001, SCF = 1.1386, RMSEA = .059 (90% CI = .054, .064, p =.003), CFI = .916, TLI = .912, SRMR =.152. A multi-group analysis was conducted on this model to examine the moderating effect of gender (see Table B.2.1 for the sequential steps of invariance tests between the two groups).

The analysis resulted in two models that illustrate the relationships observed for males and females (see *Figures B.2.1 & B.2.2;* the red lines reflect paths that are only significant among females and blue lines reflect paths that are only significant among males). As predicted, ALFOMO did decrease the severity of aggression expectancies (i.e. evaluations). However, and contrary to hypotheses, ALFOMO significantly increased perceived likelihood of aggression expectancies, for both males and females. Furthermore, consistent with previous findings, perceived severity of aggression expectancies decreased willingness to binge drinking, but only

among males. Although perceived likelihood of aggression expectancies significantly decreased binge drinking likelihood among females, the magnitude of effect is much smaller than the one observed among the males.

Table B.2.1

Aggression Expectancies: A Multi-Group Analysis of Invariance

Model		MLMχ^2	df	SCF	RM	CFI	TLI	SR	MLM$\Delta\chi^2$	df	p.	Std Est. (SE)
Baseline Models	Male	924.381	593	1.1430	.073	.898	.885	.085				
	Female	868.742	594	1.1141	.049	.940	.933	.077				
Configuaral Model		1774.749	1181	1.1271	.058	.924	.814	.078				
Factor Loading Invariance		1869.639	1220	1.1361	.060	.917	.909	.109	87.8701	39	<.01	
	Relaxed Eq. Cons.:											
	1. Willing by Willing1	1859.808	1219	1.1355	.060	.918	.910	.106	6.5783	1	<.01	M=.745 (.029) F= .774 (.022)
Residual Covariance Invariance		1914.977	1235	1.1411	.061	.913	.906	.128	46.799	16	<.01	
	Relaxed Eq. Cons.:											
	1. Drink7 with drink2	1909.356	1234	1.1409	.061	.913	.907	.126	4.8966	1	<.05	M=.551(.056) F= .461 (.059)
Intercepts Invariance		1982.491	1271	1.1370	.062	.909	.904	.131	79.5613	38	<.01	
	Relaxed Eq. Cons.:											
	1. L35 (Neg.Exp.lik.35)	1976.360	1270	1.1371	.062	.909	.905	.131	6.7062	1	<.01	M = 2.212 (104) F = 1.825 (.083)
	2. AF5 (ALFOMO 5)	1970.063	1269	1.1372	.061	.910	.906	.130	6.8930	1	<.01	M = 1.405 (.064) F =1.370 (.058)
	3. Willing1	1962.691	1268	1.1372	.061	.911	.906	.130	7.3720	1	<.01	M = 1.154 (.056) F =1.542 (.063)
	4. AF16 (ALFOMO 16)	1956.507	1267	1.1373	.061	.912	.907	.130	6.7658	1	<.01	M = 1.306 (.065) F =1.595 (.070)
	5. Drink6	1952.722	1266	1.1374	.061	.912	.907	.129	4.0659	1	<.05	M = 1.106 (.068) F =.971 (.046)
	6. Drink1	1948.252	1265	1.1375	.061	.912	.908	.129	4.8366	1	<.05	M = .891 (.059) F =.739(.031)
Means Invariance (means freely estimated)		1895.774	1256	1.1377	.059	.918	.913	.093	53.4563	9	<.01	
	Relaxed Eq. Cons.:											
	1. AGR.EVA. (AGE) 2. Likely (Beh. Int.)	1926.919	1262	1.1384	.060	.915	.910	.134	25.4168	6	<.01	AGE: F =-.301 (.152), p<.05 Likely: F =.201 (.059), p<.01

Std Est (SE) = standardized estimates (standard error), M = Mean (Male), F = Mean (Female).

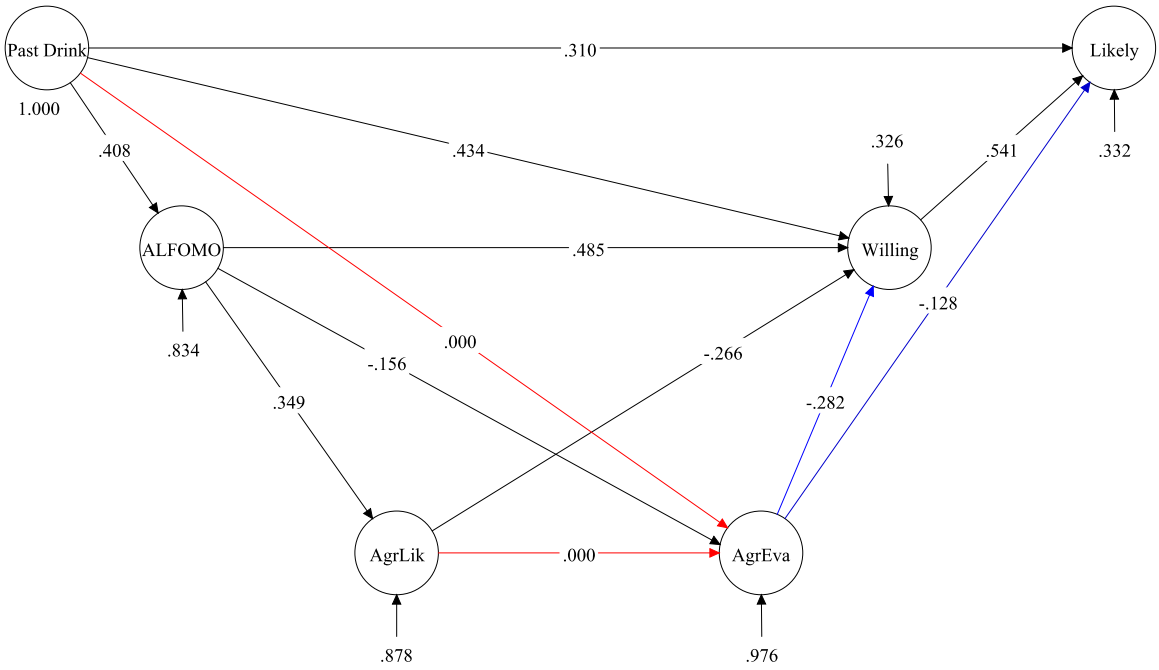

Figure B.2.1. ALFOMO, Alcohol Aggression Expectancies, & Binge Drinking Intentions (Males; N =105).

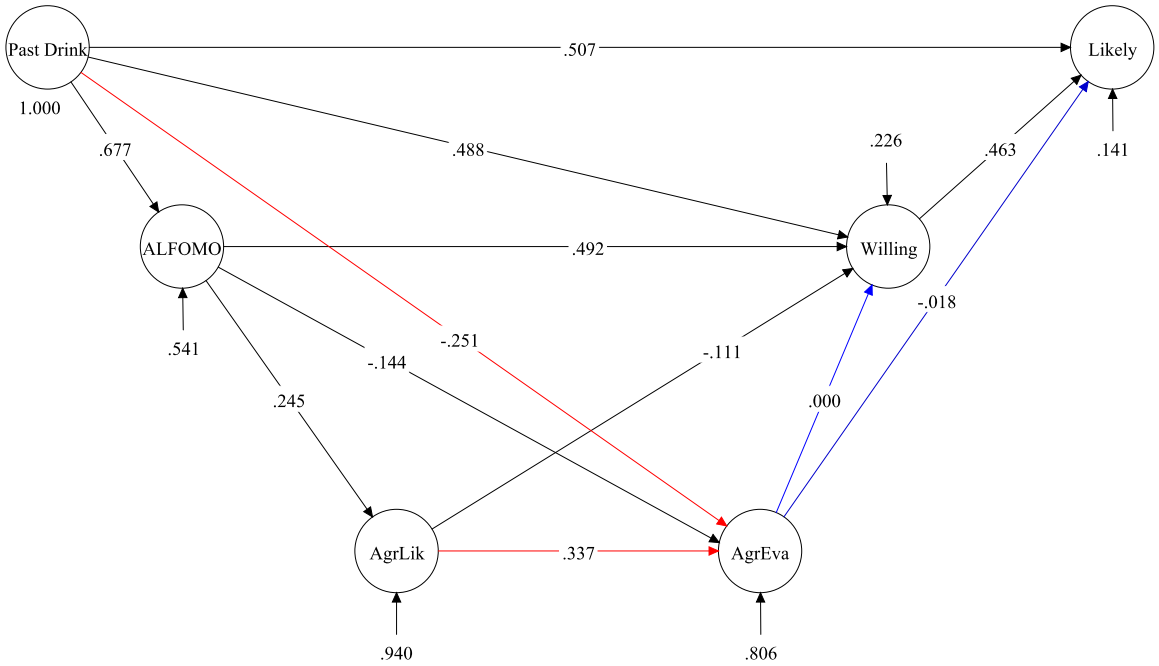

Figure B.2.2. ALFOMO, Alcohol Aggression Expectancies, & Binge Drinking Intentions (Females; N =192).

An Alternative Model. An alternative model was tested using the same rationale for positive expectancies (see *Figure B.2.3*), resulting in an acceptable model fit, MLMχ^2(629) = 1043.591, p < .001, SCF = 1.2781, RMSEA = .047 (90% CI = .042, .052, p =.803), CFI = .939, TLI = .932, SRMR =.073. An interaction term between likelihood and evaluation of negative expectancies was computed using the XWITH command and added to the model. As can be seen in Figure B.2.4., the interaction significantly predicts binge drinking willingness but not ALFOMO.

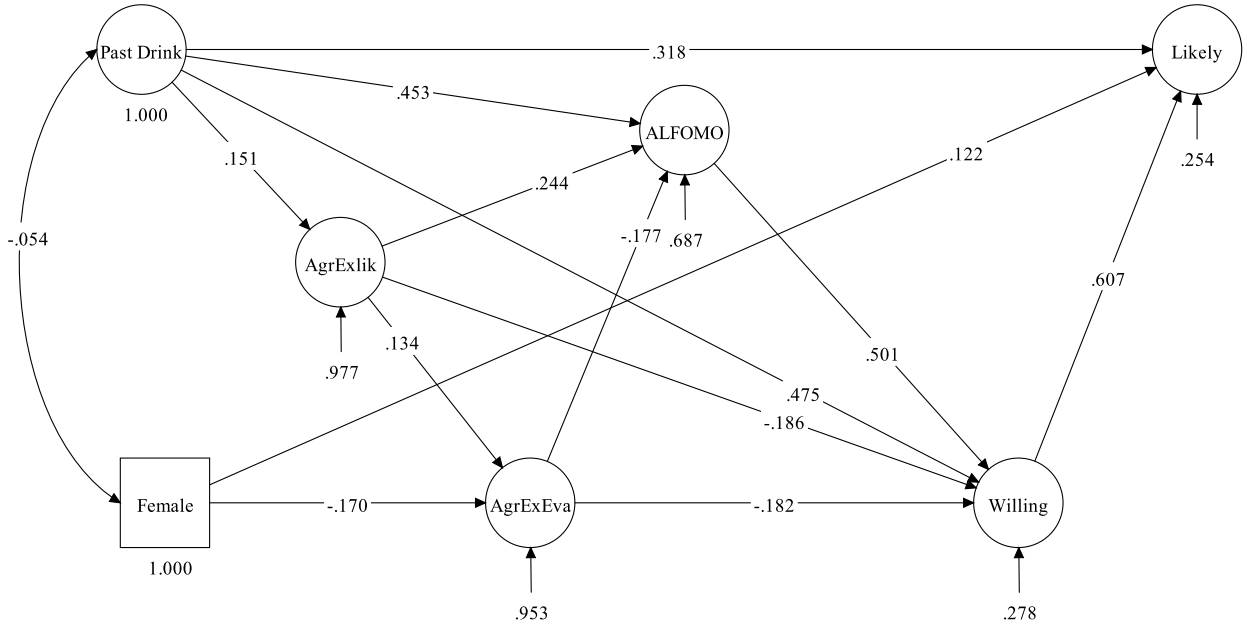

Figure B.2.3. ALFOMO, Alcohol Aggression Expectancies, & Binge Drinking Intentions: An Alternative Model

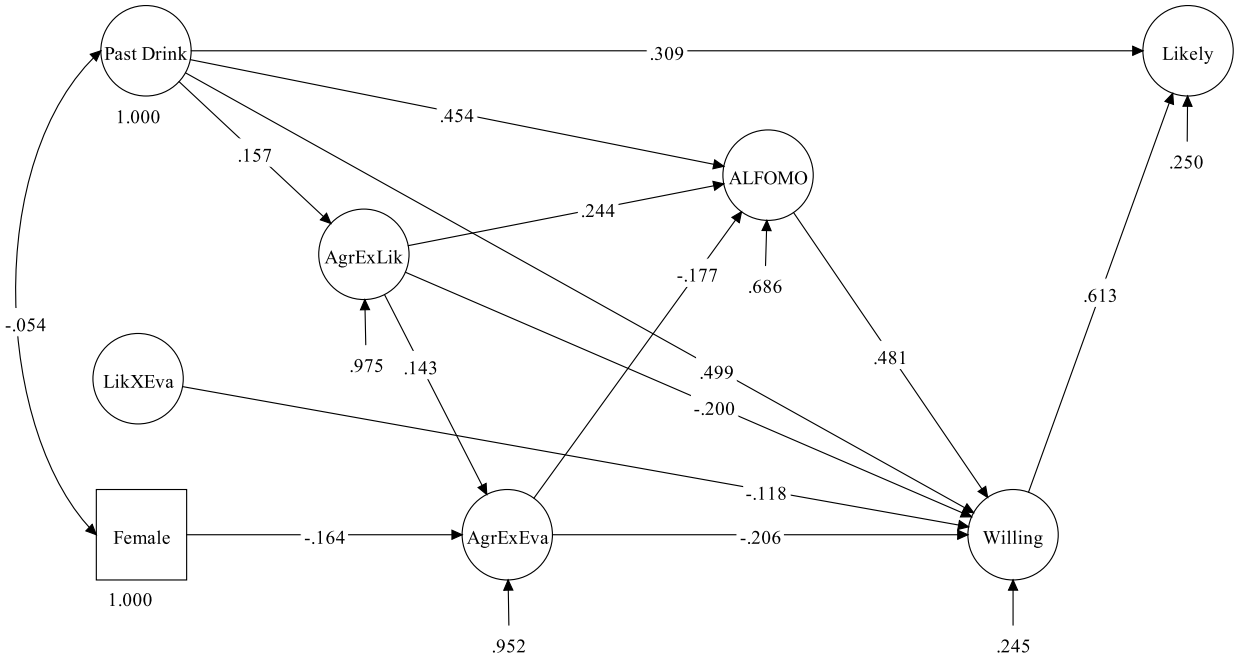

Figure B.2.4. The Effect of the Interaction Between Aggression Likelihood and Evaluation on Binge Drinking Willingness

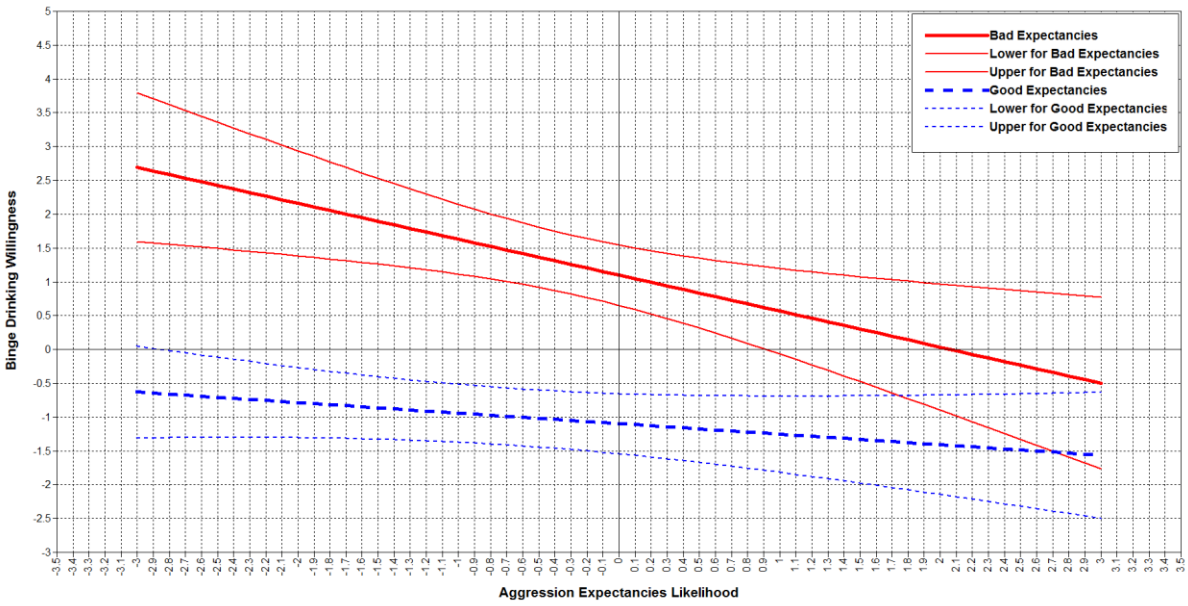

Figure B.2.5. The Moderating Effect of Aggression Expectancies Evaluation (Severity) on the Relationship Between Aggression Expectancies Likelihood and Binge Drinking Willingness

3. ALFOMO and Self-Perception Expectancies

Testing the mediation model with the self-perception expectancy three items (i.e. I would feel- moody, guilty, & self-critical) which had factor loadings ranging between .59 to .73, showed that although ALFOMO reduced the severity of self-perception expectancies, those evaluations failed to significantly predict binge drinking intentions. This model had a very good fit, MLM$\chi^2(1072) = 1595.301$, $p < .001$, SCF = 1.1896, RMSEA = .057 (90% CI = .051, .063, p =.026), CFI = .928, TLI = .925, SRMR =.174.

Further multi-group analysis was conducted to examine gender effects (see Table B.3.1 for invariance tests at various levels of the analysis). There was a total of ten parameters that showed evidence of non-invariance across gender. After testing invariance at the measurement level, the equivalence of structural paths across gender was examined. Self-perception evaluation failed to predict binge drinking intentions, hence was eliminated from the model. In the ALFOMO-self-perception expectancies model, gender moderated the relationship between ALFOMO and self-perception likelihood, which was significant only among males (see *Figures B.3.1* & *B.3.2*). However, contrary to hypothesis, ALFOMO increased, rather than decreased, perceived likelihood of those self-perceptions. Mediation analysis using the 95% bootstrapped confidence interval revealed that none of the indirect effects were significant.

Table B.3.1

Self-Perception Expectancies: A Multi-Group Analysis of Invariance

Model		MLMχ^2	df	SCF	RM	CFI	TLI	SR	MLM$\Delta\chi^2$	df	p.	Std Est. (SE)
Baseline Models	Male	916.092	592	1.1367	.073	.898	.885	.084				
	Female	838.405	592	1.1419	.047	.947	.940	.074				
Configuaral Model		1748.780	1180	1.1397	.057	.927	.918	.076				
Factor Loading Invariance		1832.141	1219	1.1485	.059	.922	.914	.107	78.5502	39	<.01	
	Relaxed Eq. Cons.:											
	1. Willing by Willing1	1821.909	1218	1.1477	.058	.923	.915	.104	6.2221	1	<.01	M=.754 (.025) F= .773 (.022)
Residual Covariance Invariance		1888.111	1234	1.1538	.060	.916	.910	.128	54.0721	16	<.01	
	Relaxed Eq. Cons.:											
	1. Drink3 with Drink1	1879.438	1233	1.1535	.060	.917	.911	.129	6.9375	1	<.01	M=.709(.046) F= .458 (.068)
	2. E28R with L28	1871.628	1232	1.1535	.060	.918	.911	.128	7.8100	1	<.01	M=.185 (.065) F= .498 (.070)
Intercepts Invariance		1943.445	1269	1.1492	.060	.914	.909	.133	74.0383	37	<.01	
	Relaxed Eq. Cons.:											
	1. AF5 (ALFOMO 5)	1934.120	1268	1.1494	.060	.915	.910	.132	11.5336	1	<.01	M = 1.412 (.067) F =1.381 (.059)
	2. Willing1	1926.577	1267	1.1494	.060	.916	.911	.132	7.5430	1	<.01	M = 1.146 (.056) F =1.537 (.065)
	3. AF16 (ALFOMO 16)	1921.327	1266	1.1496	.059	.912	.912	.132	6.3045	1	<.01	M = 1.332 (.067) F =1.571 (.065)
	4. Drink6	1917.039	1265	1.1497	.059	.917	.912	.131	4.6308	1	<.05	M = 1.105 (.067) F =.974 (.045)
	5. Drink1	1912.596	1264	1.1498	.059	.917	.913	.131	4.8049	1	<.05	M = .870 (.056) F =.584 (.041)
	6. L30 (Neg.Ex.Lik.30)	1908.545	1263	1.1499	.059	.917	.913	.131	4.3644	1	<.01	M = 2.126 (.098) F =2.327 (.097)
Means Invariance (means freely estimated)		1860.601	1250	1.1480	.058	.922	.917	.093	44.0239	13	<.01	
	Relaxed Eq. Cons.:											
	1. Likely (Beh. Int.)	1900.415	1264	1.1501	.059	.919	.914	.141	37.1541	14	<.01	Likely: F =.183 (.058), p<.01

SCF = Scaling Correction Factor, RM. = RMSEA, SR. = SRMR, Std Est (SE) = standardized estimates (standard error), M = Male's Mean, F = Female's Mean.

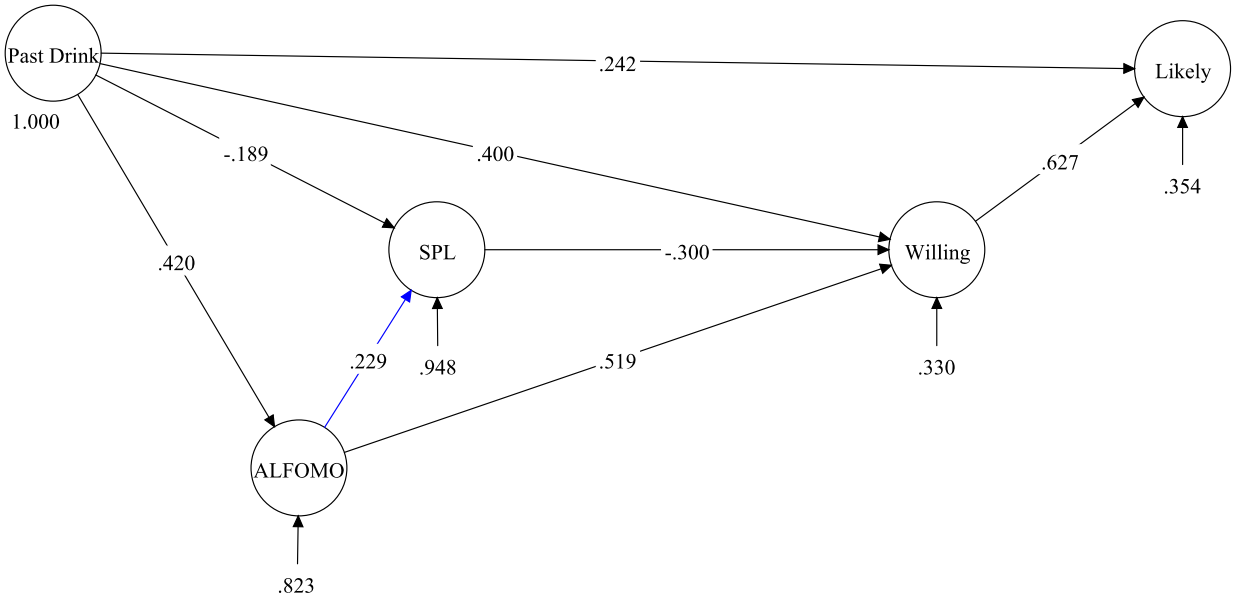

Figure B.3.1. ALFOMO, Alcohol Self-Perception Expectancies, & Binge Drinking Intentions (Males; N = 106).

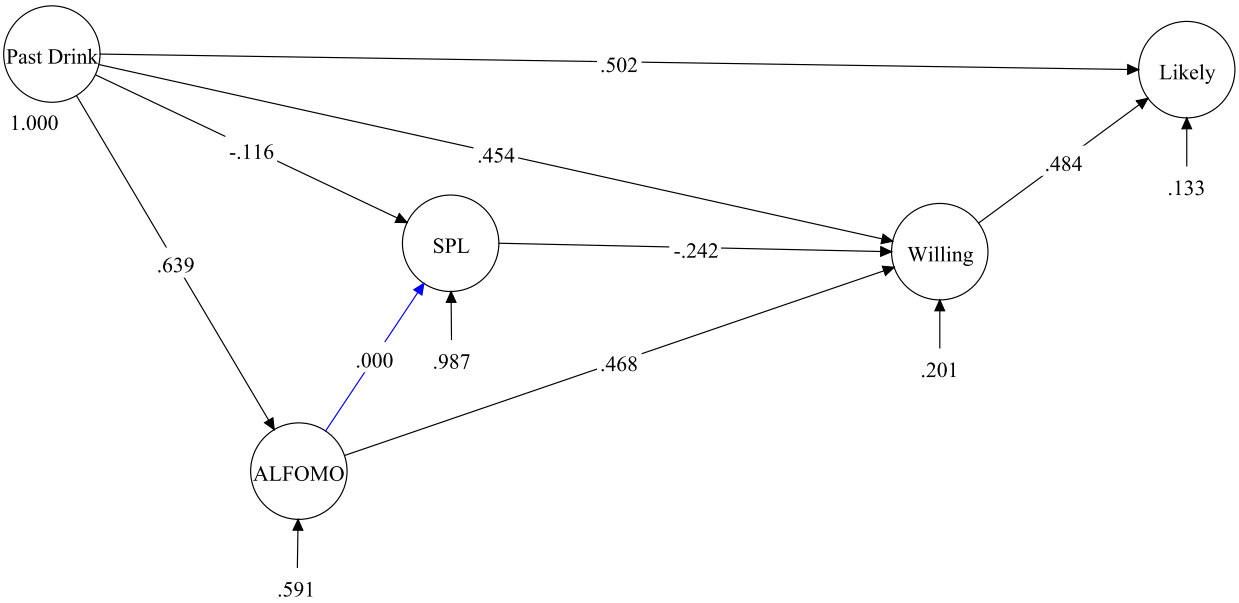

Figure B.3.2. ALFOMO, Self-Perception Expectancies, & Binge Drinking Intentions (Females; N =194).

An Alternative Model. An alternative model was tested using the same rationale for positive expectancies (see *Figure B.2.3*), resulting in an acceptable model fit, MLMχ^2(531) = 878.478, p < .001, SCF = 1.3375, RMSEA = .047 (90% CI = .041, .052, p =.838), CFI = .945, TLI = .938,

SRMR =.072. SPE (i.e. self-perception evaluation) failed to predict any of the outcome variables, thus was eliminated from the model (see *Figure B.3.4*).

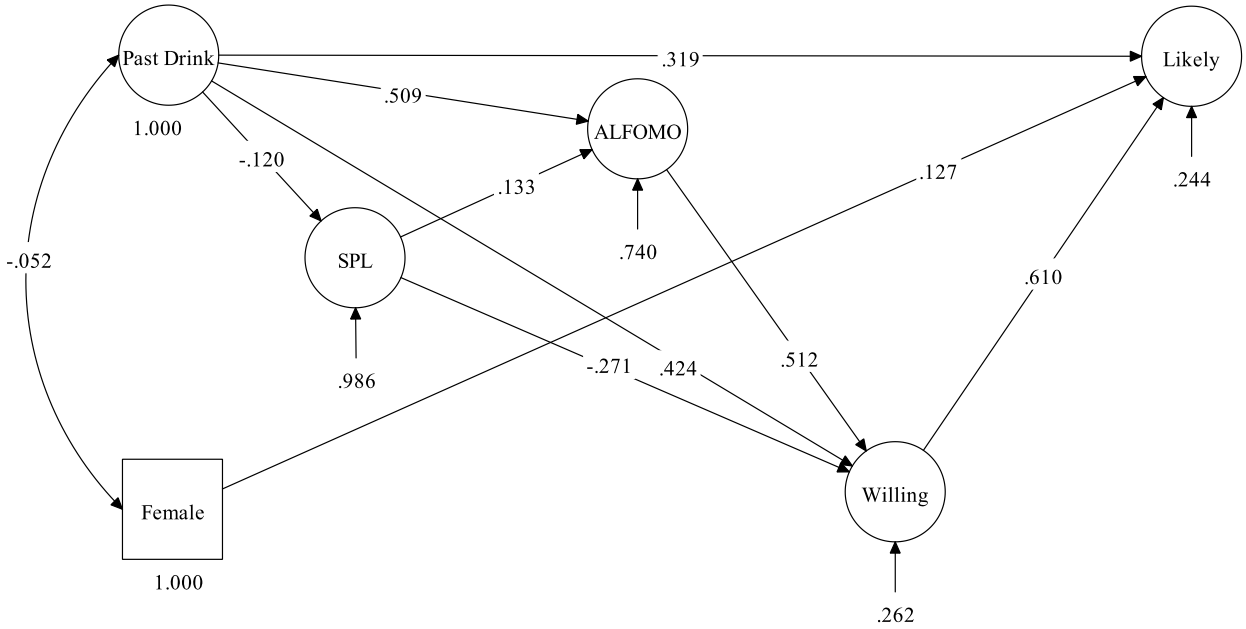

Figure B.3.3. ALFOMO, Self-Perception Expectancies, & Binge Drinking Intentions: An Alternative Model

Appendix C

ALFOMO, Alcohol Positive and Negative Expectancies, and Binge Drinking Intentions

The effects of ALFOMO along with the alcohol positive and negative expectancies on binge drinking intentions were simultaneously modeled to examine which effects will remain. A model that combines the paths depicted in *Figure 5.3.1* and *Figure 5.4.2* was estimated. The whole sample was used in this model because multi-group analysis was not possible due to the small male size in relation to the number of model parameters. The model resulted in an acceptable fit, MLMχ^2(2614) = 3897.641, $p < .001$, SCF = 1.084, RMSEA = .042 (90% CI = .039, .045, p =1.000), CFI = .910, TLI = .904, SRMR =.085. As can be seen in *Figure C.1*, ALFOMO is significantly associated with positive expectancies likelihood and decreased the perceived evaluation of negative expectancies. ALFOMO, along with past heavy drinking behavior, failed to predict negative expectancies likelihood, which was subsequently added as an exogenous variable. Negative expectancies likelihood was slightly associated with less binge drinking intentions.

The addition of the interaction effect between positive expectancies likelihood and evaluation (i.e. LikXEva) to the model resulted in non-significant paths between negative expectancies evaluation and binge drinking willingness. Therefore, negative expectancies evaluation was eliminated. Additionally, the direct paths from past drinking to binge drinking intentions became non-significant. Re-specifications were made and the model was re-estimated (see *Figure C.2*). As can be seen in the model, the interaction term significantly predicted ALFOMO and binge drinking willingness and likelihood, suggesting that as the evaluation of positive expectancies gets higher, the impact of positive expectancies likelihood on ALFOMO

and binge drinking intentions becomes stronger. The log-likelihood indicated that the interaction effect added a significant variance to the model, $D = 15.688$, $p < .01$.

Mediation analyses using the 95% bootstrapped confidence intervals indicated that ALFOMO significantly mediated the effects of positive expectancies likelihood on binge drinking willingness, $B = .238$, $p < .01$, [95% CI = .130, .345], and likelihood, $B = .192$, $p < .01$, [95% CI = .043, .342]. ALFOMO also mediated the effects of past drinking on binge drinking willingness, $B = .208$, $p < .01$, [95% CI = .089, .327], and likelihood, $B = .168$, $p < .05$, [95% CI = .009, .328].

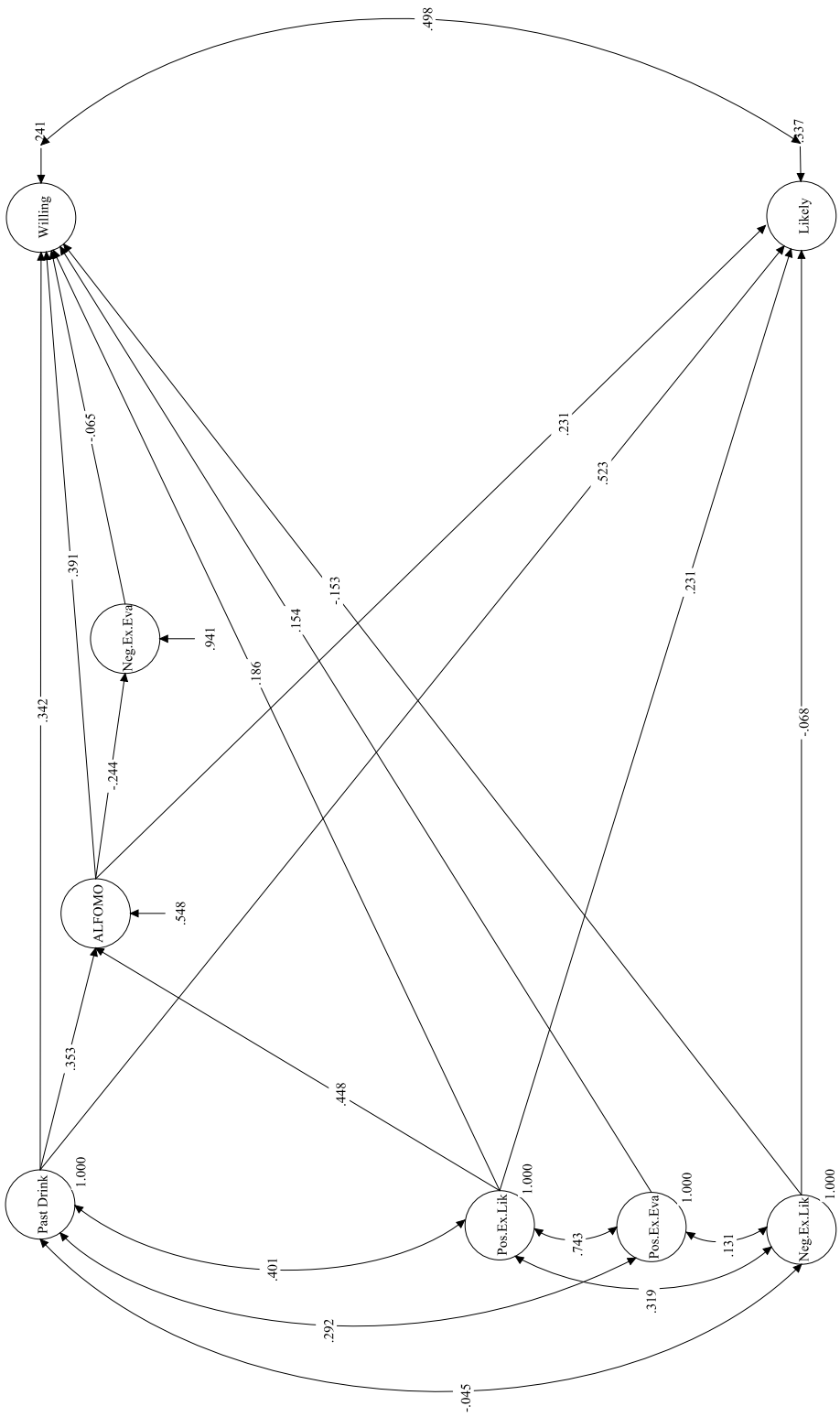

Figure C.1. ALFOMO, Positive & Negative Expectancies, & Binge Drinking Intentions.

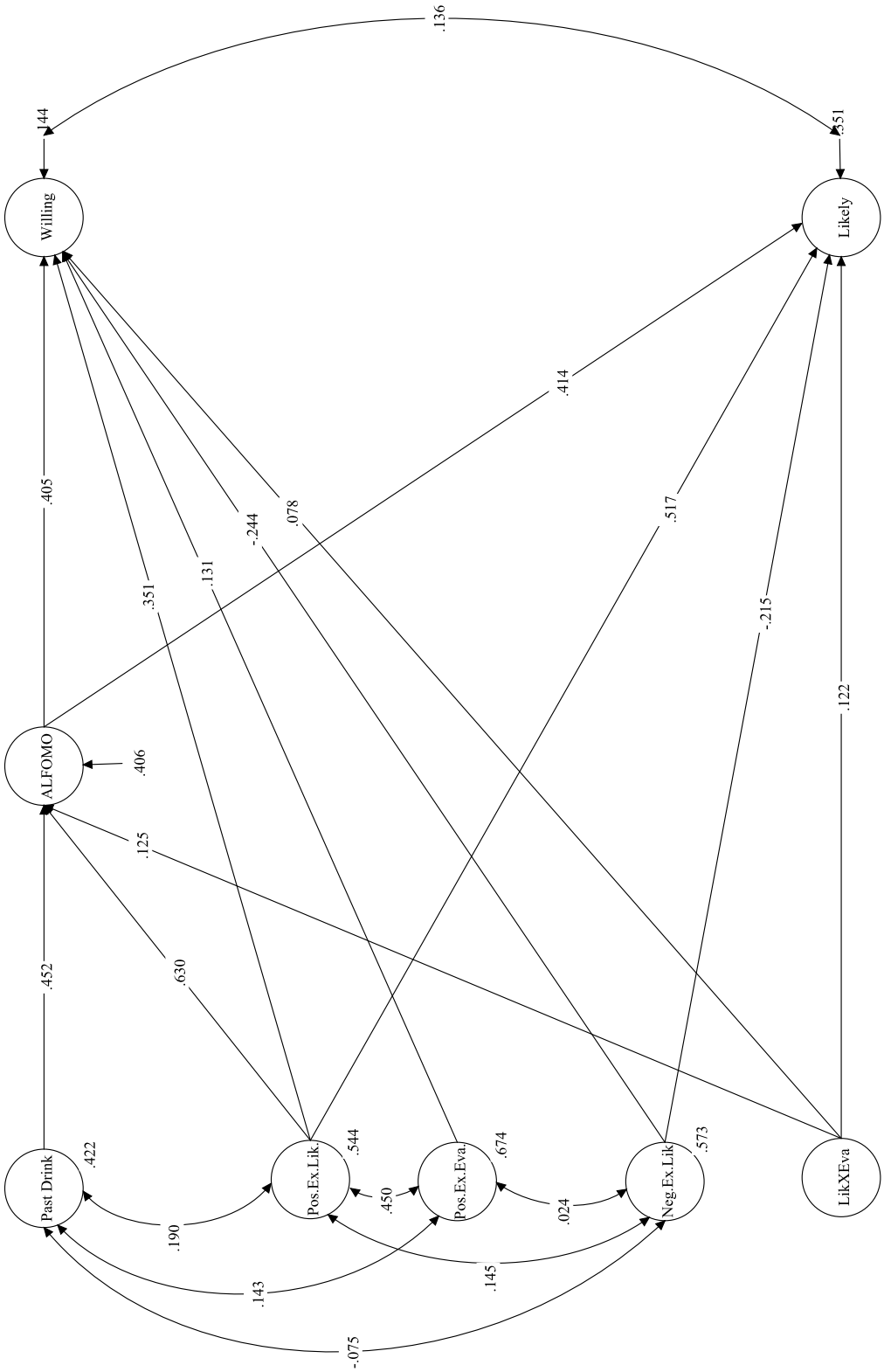

Figure C.2. ALFOMO, Positive & Negative Expectancies, & Binge Drinking Intentions with the LikXEva Interaction.