

1-1-2013

# Gender Differences In College Student Drinking: The Relations Of Social And Cognitive Constructs

Leah Dawn Terian  
*Wayne State University,*

Follow this and additional works at: [http://digitalcommons.wayne.edu/oa\\_dissertations](http://digitalcommons.wayne.edu/oa_dissertations)

---

## Recommended Citation

Terian, Leah Dawn, "Gender Differences In College Student Drinking: The Relations Of Social And Cognitive Constructs" (2013).  
*Wayne State University Dissertations*. Paper 707.

This Open Access Dissertation is brought to you for free and open access by DigitalCommons@WayneState. It has been accepted for inclusion in Wayne State University Dissertations by an authorized administrator of DigitalCommons@WayneState.

**GENDER DIFFERENCES IN COLLEGE STUDENT DRINKING: THE  
RELATIONS OF SOCIAL AND COGNITIVE CONSTRUCTS**

by

**LEAH TERIAN**

**DISSERTATION**

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

**DOCTOR OF PHILOSOPHY**

2013

MAJOR: EDUCATIONAL PSYCHOLOGY

Approved By:

---

Advisor

Date

---

---

---

---

## ACKNOWLEDGMENTS

I would like to take this opportunity to thank my advisor, Dr. Cheryl Somers, and my committee members, Dr. Alan Hoffman, Dr. Francesca Pernice-Duca, and Dr. Marjorie Beeghly for their time, expertise and guidance throughout the dissertation process.

I would especially like to thank my parents, Sam and JoAnn Terian, for their unyielding love and support. My educational aspirations lead me down a lengthy and stressful road, and words cannot describe my gratitude to them for all that they have done for me. I would also like to thank my brother, David, and my sister-in-law Desiree for their love and support. A special thanks to my nieces, Ava and Stella, who have lifted my spirits on a number of occasions, I love you guys to pieces!

Thank you to all of my amazing friends, you know who you are, who have provided a great deal of support and encouragement, especially when I questioned my own ability at completing this process. Thank you especially to Sonja Montgomery, my best friend and classmate, who went through this entire process at the same time I did. Writing papers, studying for exams, figuring out SPSS, you name it and we've been through it. The last several years have been a bit hectic (to say the least), I am so glad that I had you with me, I don't think I could have done this without you!

Lastly, I would like to thank my best friend James Boomis, for his love and encouragement. I appreciated your constant subtle reminders to work on my dissertation (ok, maybe not so subtle) and your uncanny ability to make me smile.

## TABLE OF CONTENTS

Acknowledgments.....	ii
Preface.....	iii
Chapter 1 - Introduction.....	1
Emerging Adulthood.....	1
Drinking Behaviors in Emerging Adulthood.....	1
Theoretical Framework.....	4
Interpersonal Factors-Peer Modeling.....	6
Interpersonal Factors-Descriptive Norms.....	7
Interpersonal Factors-Injunctive Norms.....	7
Interpersonal Factors-Parental Monitoring.....	8
Intrapersonal Factors-Alcohol Expectancies.....	11
Intrapersonal Factors-Drinking Motives.....	12
Limitations.....	13
Purpose of Current Study.....	13
Research Questions.....	13
Chapter 2 - Literature Review .....	15
Emerging Adulthood.....	15
Drinking Behaviors in Emerging Adulthood.....	16
Drinking Behaviors and Gender.....	18
Bronfenbrenner’s Bioecological Theory Systems.....	22
Interpersonal Factors-Peer Modeling.....	25
Interpersonal Factors-Descriptive Norms.....	26

Interpersonal Factors-Injunctive Norms.....	28
Interpersonal Factors-Parental Monitoring.....	30
Intrapersonal Factors-Alcohol Expectancies.....	31
Intrapersonal factors-Drinking Motives.....	33
Chapter 3 - Method .....	36
Participants.....	36
Measures.....	38
Drinking behavior.....	38
Alcohol expectancies.....	39
Drinking motives.....	40
Social Modeling.....	42
Descriptive Norms.....	42
Injunctive Norms.....	42
Parental Monitoring.....	43
Procedure.....	43
Chapter 4 - Results.....	47
Overview.....	47
Research question 1.....	50
Research question 2.....	52
Research question 3.....	54
Research question 4.....	58
Research question 5.....	69
Chapter 5 - Discussion.....	72

Research question 1.....	73
Research question 2.....	74
Research question 3.....	75
Research question 4.....	76
Research question 5.....	80
Limitations.....	81
Implications and recommendations.....	81
Conclusions.....	82
Appendix A: HIC Approval.....	84
Appendix B: Information Sheets.....	86
Appendix C: Instruments.....	88
References.....	98
Abstract.....	111
Autobiographical Statement.....	113

## LIST OF TABLES

Table 1: Frequency distributions.....	37
Table 2: Statistical analyses.....	45
Table 3: Descriptive statistics-scaled variables.....	48
Table 4: Intercorrelation matrix.....	49
Table 5: Multiple linear regression-predicting college drinking using social factors.....	51
Table 6: Multivariate linear regression-predicting college drinking behaviors using social factors.....	51
Table 7: Multivariate linear regression analysis-predicting college drinking using cognitive Factors.....	53
Table 8: Multivariate linear regression analysis-predicting college drinking behaviors using cognitive factors.....	53
Table 9: Hierarchical multivariate linear regression analysis-overall college drinking with social and cognitive factors.....	55
Table 10: Hierarchical multivariate linear regression analysis-overall college drinking behaviors with social and cognitive factors.....	57
Table 11.1: Mediation analysis-college drinking and alcohol expectancies as mediated by peer modeling.....	62
Table 11.2: Mediation analysis-college drinking and alcohol expectancies as mediated by descriptive norms.....	63
Table 11.3: Mediation analysis-college drinking and alcohol expectancies as mediated by injunctive norms.....	64
Table 11.4: Mediation analysis-college drinking and alcohol expectancies as mediated by parental monitoring.....	65
Table 11.5: Mediation analysis-college drinking and drinking motives as mediated by peer modeling.....	66
Table 11.6: Mediation analysis-college drinking and drinking motives as mediated by descriptive norms.....	67

Table 11.7: Mediation analysis-college drinking and drinking motives as mediated by injunctive norms.....	68
Table 11.8: Mediation analysis-college drinking and drinking motives as mediated by parental monitoring.....	69
Table 12: Gender distributions among variables.....	71



## **Chapter 1**

### **Introduction**

#### **Emerging Adulthood**

In the last several years there has been an increasing level of interest in the period of development between adolescence and young adulthood, more specifically the period of development from ages 18 through 25. After a considerable amount of research, Arnett (2000) developed a theory that focused specifically on the emotional and behavioral progression of individuals that fall into this age period. This theory, known as emerging adulthood, can be described as “a distinct period” of development defined by such features as “identity exploration”, “instability”, “feeling in-between”, “being self-focused” and “possibilities” (Arnett, 2004, p.8). During this period, individuals are more likely to separate from their family of origin and begin to experiment with varying levels of independence. This type of separation is most commonly seen during adolescents’ transition from high school to college, during which time they are struggling to develop a sense of autonomy while establishing themselves into the culture of college life. The transition to college is also a time for the emerging adult to develop new peer groups, become involved in romantic relationships and experiment with different types of risk-taking behaviors (Arnett, 2000).

#### **Drinking Behaviors in Emerging Adulthood**

Current literature suggests that the adoption of risk-taking behaviors typically increases during the college years, particularly during the transition from adolescence to emerging adulthood (Arnett, 2005; Bachman et al., 1997). More specifically, statistics suggest that excessive alcohol consumption by college students is a prevalent national issue that has led to a number of negative and, at times, life threatening consequences. This problem has been so severe that the United States Attorney General has been involved in the research of developing

effective interventions, with the goal of decreasing college drinking by half by the year 2010, ( US Department of Health Services, 2000). Unfortunately, college drinking has long been an issue for concern, and current statistics suggest that we have a long way to go before we achieve that goal. For example, research conducted by Hingson et al. (2005) on college risk-taking behaviors found that “approximately 1,700 college students ranging in age from 18-24 die each year from alcohol-related unintentional injuries”, and “599,000 students between the ages of 18-24 are unintentionally injured under the influence of alcohol” (p.260 ). Hingson et al. (2005) also found that “100,000 students between the ages of 18 and 24 have had unprotected sex while under the influence of alcohol” (p.260 ). Another study conducted by Wechsler et al. (2002) found that approximately 25 percent of college students have reported negative academic consequences from drinking alcohol, including skipping classes, performing poorly on papers and exams, and receiving lower grades.

Based on the previously mentioned statistics it is evident that alcohol consumption is of great concern on college campuses. A common practice is binge drinking, which can be defined as the consumption of four alcohol beverages in a row for females, and five alcohol beverages in a row for males (Wechsler et al. 2000). One study conducted by Vik et al. (2000) found that as many as 84.2% of college students reported a binge drinking episode in the last 90 days, while a similar study conducted by Wechsler et al. (2000) found that 44% of college students reported a binge drinking episode in the last two weeks. A longitudinal study conducted by the Harvard School of Public Health sampled 140 college campuses across the United States four times between 1993-2001 to obtain information about student alcohol consumption. What they found was that 44% of the sampled college population fell into the category of binge drinking,

and that these same individuals were responsible for 91% of alcoholic drinks consumed by college students.

Another critical study that examined alcohol and drug abuse in students is *Monitoring the Future*, an ongoing longitudinal study conducted by the University of Michigan. Initial data collected from the study examined alcohol and drug use of high school seniors, and follow-up data from the participants sampled in the years following graduation is analyzed, providing annual rates of college student alcohol and drug use. Results from the 2006 survey found an 86.6% lifetime prevalence of alcohol use for college students. Eighty-three percent of these students had consumed alcohol in the previous year, with 67.9% reporting use within the 30 days prior to the survey (Johnston, O'Malley, Bachman, &Schulenberg, 2006).

Research done on college drinking has also examined the role that gender plays in the adoption of drinking behaviors. For example, one study conducted by Weschler et al. (1995) examined the relationship between the amount of alcohol used and the incidents of alcohol-related issues among male and female college students. Results from this study found that women require less alcohol (four drinks in a row) than men to be placed in the category of “binge drinker” but are likely to experience the same drinking-related problems as men. A similar study by White et al. (2006) found that males were more likely to engage in drinking on college campuses (1 out of 5) than were females (1 out of 10), and that men consumed more alcohol (10+ drinks) than did females (8+ drinks) in a two week time frame.

Similar to the previously mentioned studies, a great deal of the literature on gender differences in college drinking has focused primarily on the frequency and quantity of alcohol consumed by male verses female students, typically with the goal of obtaining a more clear definition of what constitutes the term “binge drinking” (Weschler et al., 1995). In other words,

it appears that the attention given in much of the research thus far to gender differences has been pertaining to quantifying factors (i.e., number of drinks before a male vs. female is intoxicated) without much exploration into gender patterns with more depth. This is of concern due to the fact that a select number of studies that did examine gender differences found significance in the role that gender plays relative to drinking behaviors, which is of critical importance when designing and implementing preventative interventions. One such study by Nolan-Hoeksema et al. (2002) examined specific correlates of alcohol use and depressive symptoms as related to drinking behaviors in males and females. Results from this study found that motivation for drinking, such as using alcohol to cope with life stressors or to achieve “feeling high”, is a stronger correlate of alcohol related problems among males, while symptoms of depression are a more relevant correlate of alcohol related problems among females. Another study by Randolph et al. (2009) investigated the role of gender and ethnicity in the relationship between alcohol consumption and risky sexual behavior. Results from this study indicated African-American women endorsed lower alcohol expectancies and alcohol use when compared to both males and females of other ethnic groups. It was also found that males who were older in age engaged in more frequent binge drinking and had more sexual partners than females.

### **Theoretical Framework**

Despite the significance of gender in college drinking, few studies have examined intrapersonal and interpersonal factors that contribute to college binge drinking in males and females separately. Both intrapersonal factors, defined as internal factors that influence a person’s decision making, and interpersonal factors, defined as external factors within an person’s life-space that influence decision making, are of crucial importance during emerging adulthood. Not only are these factors important when examined separately, but their combined

effects are also of importance. However, studies that have looked at interpersonal factors, such as family and peer influence, are focused exclusively on social predictors of college binge drinking and fail to examine the various cognitive predictors, while other studies focus on cognitive predictors and do not take into account the various social influences that exist for college students. While it is important to consider the independent influences of such factors, there is also a great deal of benefit that can be gained from examining the relationship between these factors.

An ecological framework exemplifies why this is true, and such a perspective can be used to conceptualize potential gender patterns in binge drinking according to the Bioecological Systems Theory (EST; Bronfenbrenner, 1977). This theory posits that as humans we are significantly impacted by the environment which surrounds us, and that our environment is made up of complex layers. Interactions within and between the various factors that make up these layers are thought to influence an individual's development. This theory suggests that these layers, which translate into five systems, exist both individually and interdependently. The proposed study will focus primarily on the first two systems; microsystem and mesosystem. The microsystem can be defined as the layer that is closest to the individual and contains elements with which the individual has direct contact. Within the microsystem can be found such elements as individual cognitions, and interactions with peers and family, all of which have the potential to influence the behaviors an individual chooses to engage in. In addition to the importance of the various elements found within a microsystem, the setting with which these interactions take place also plays a crucial role in bioecological systems theory. The setting can be defined as "a place with particular physical features in which the participants engage in particular activities in particular roles for given periods of time" (Brim, 1975). For example,

individuals attending college consistently interact with their environment (i.e., college campus, peers, faculty, etc.) while in the role of student for a given period of time (four years on average). The mesosystem can be defined as relations or connections between microsystems, in which events that occur within one microsystem potentially impact another microsystem. For example, an individual who is exposed to strict rules regarding alcohol use by their parents within their family microsystem may have a difficult time at school in which the campus culture deems alcohol consumption an acceptable form of socialization. Literature on the various contributors to college binge drinking is explored in the following sections.

### **Interpersonal Factors**

**Modeling.** The process of transitioning to college life is already a time of increased stress and emotional lability, during which time students must form support systems outside of the family. Research suggests that during this time students tend to adopt peer groups as a means of coping with the transition, relying less on guidance from parents and family members. During this transition to the college environment students often become influenced by the actual or perceived behaviors of their peer groups (Hannum et al., 2004). One evidence-based explanation for the importance of peer group influences on individual behavior can be demonstrated through the framework of Social Learning Theory (Bandura, 1986) and the concept of modeling. The modeling of peer drinking plays a key factor in personal alcohol consumption due to the fact that peers are both salient and readily available models in the college environment (Lau et al., 1990). A comprehensive review of modeling research found that overall participants exposed to heavy drinking models consumed more alcohol than those exposed to light drinking models or no models at all (Borsari et al., 2001).

**Descriptive norms.** While modeling provides evidence of a relationship between peer group drinking behaviors and individual drinking behavior, research suggests that increases in student alcohol consumption may also be related to biased perceptions of overall drinking norms (Ham et al., 2003). More specifically, college students' perceptions of peer drinking, also referred to as descriptive norms, is one factor that research suggests influences the drinking pattern of college students. A college environment in which excessive drinking is not only encouraged but perceived by peer groups as normative and positive tends to increase the percentage of heavy drinkers in that group when compared to peer groups in which excessive drinking is not encouraged. A study conducted by Martin et al. (1995) found that students who associate with more friends who drink excessively tended to consume more alcohol than those students who associate with fewer friends who drank. Another study conducted by Reis et al. (2000) examined factors that are predictive of student drinking in a large representative sample of college students. While a number of significant influences such as drinking patterns in high school and alcohol expectancies were examined in this study, results indicated peer drinking norms to be the strongest predictor of student alcohol consumption.

**Injunctive norms.** College students' perceived acceptability of drinking behaviors by their peer group and/or parents, referred to as injunctive norms, has also been found to be a critical factor in the development of drinking behaviors in college. One study conducted by Perkins (2002) found that college students' own consumption of alcohol was more heavily influenced by associations with peers who approved of excessive alcohol consumption than by other variables such as age, year in school and number of close friends. Research has also found that college students have a tendency to overestimate the frequency and quantity of their peers' alcohol consumption, suggesting that many college students not only perceive that drinking is

accepted by their peer group, but that excessive drinking is considered to be the norm (Borsari et al., 2003).

Another study by Boyle et al. (2006) examined the relationship between students' perceptions of parental approval of drinking (injunctive norms) and problem drinking occurrence. Results indicated that perceived parental approval of drinking occurred in approximately one third of the students sampled and was significantly associated with those students experiencing drinking related problems. More specifically, perception of the mother's approval of drinking was more strongly associated with alcohol consumption and related problems than perception of the father's approval of drinking.

Gender differences have also been noted when examining the role of injunctive norms in alcohol consumption. A study by Talbott et al. (2008) examined drinking likelihood, alcohol problems and peer influence in first-year college students who resided on campus. Results found that male students were more likely than females to indicate that peers influence their alcohol consumption in a number of social settings. In addition, students' perceptions of heavy drinking among friends was positively associated with the number of days spent drinking in the previous month.

**Parental monitoring.** Research over the years has supported the notion that parents play a crucial role in their child's socialization and development (Avolio, 2009). According to Bandura (1980) the development of important socio-cognitive elements are partially dependent upon the observation of certain behaviors by key figures in a child's life (i.e., parents). As a result, a number of studies have examined how parents impact the various stages of child development, paying considerable attention to the transition from adolescence into young adulthood. One area of particular interest is the role that parents play in the development of



drinking behaviors in college students (Abar&Turrisi, 2008). More specifically, such factors as parental control/monitoring during middle and high school and parental approval of student alcohol consumption in high school have been found to influence drinking behaviors in college students.

Studies that examined the role of parental monitoring in college drinking behaviors have looked at the importance of such elements as parental supervision and behavioral control during the middle and high school years. Research has found that such elements have been linked to a decreased risk of both adolescent behavior problems (Pettit, Laird, Dodge, Bates, & Criss, 2001; Diclemente, Wingwood, Crosby, Sionean, Cobb, Harrington, Davies, Hook & Oh, 2001), and adolescent alcohol and substance abuse (Steinberg, Fletcher & Darling, 1994; Webb, Bray, Getz & Adams, 2002). The concept of parental monitoring is defined by Dishion & McMahon (1998) as “a set of correlated parenting behaviors involving attention to and tracking of the child’s whereabouts, activities and adaptations” (p.61). This pattern of monitoring appears to serve a kind of protective effect on adolescents. The longevity of this effect has been studied some. One study conducted by White et al. (2006) examined the effects of specific protective factors, including parental monitoring, on the drinking behaviors of individuals transitioning from high school to college. It was found that parental monitoring had a direct protective effect on the increase of alcohol consumption in college students, and that the influence of parental monitoring in adolescence (i.e., high school) is likely to maintain its hold through emerging adulthood. In other words, parents who monitor their child’s activities and set limits in early adolescence are more likely to influence the adoption of pro-social behaviors by their children, which serves as a protective factor in regard to substance abuse behaviors.

Similarly, a longitudinal study conducted by Barnes et al. (2006) examined the effects that parental monitoring and peer deviance had on the development of alcohol use and substance abuse in early adolescence and then again in emerging adulthood. Results found that increases in parental monitoring in early adolescence (participants aged 13-16) lead to lower initial levels of heavy use, and that these effects were maintained five years later (participants aged 18-22). These results, similar to the previous study, support the idea that early parental monitoring serves as a protective factor for the development of drinking behaviors and has the ability to maintain these effects.

In regard to gender, a study by Patock-Peckham et al. (2011) examined gender specific parental influences as they relate alcohol consumption in emerging adults. Results from this study found that for females, perceptions of a permissive father were indirectly linked to more alcohol-related problems through lower levels of monitoring by fathers. Perceptions of an authoritative father were also indirectly linked to fewer impulsive symptoms through higher levels of monitoring by fathers among daughters. For males, perceptions of a permissive mother were indirectly linked to more alcohol-related problems through lower levels of monitoring by mothers. Perceptions of mother authoritativeness were indirectly linked to fewer alcohol-related problems through more monitoring by mothers.

### **Intrapersonal Factors**

Research has found that in addition to social factors (i.e., peers, family), cognitive factors play a key role in the development of drinking behaviors in college students. The literature also suggests that while various domains of alcohol related cognitions share common variance, some factors have been found to have a greater predictive value than others (Greenfield et al., 2009).

Two of the more influential factors, alcohol expectancies and drinking values, will be discussed in detail.

**Positive and negative alcohol expectancies.** Jones et al. (2001) defined alcohol expectancies as “structures in long-term memory that have an impact on cognitive processes governing current and future consumption” (p.59). More specifically, alcohol expectancies are the beliefs that individuals possess about the behavioral, cognitive and emotional effects of drinking alcohol (Sher et al., 1996). According to Alcohol Expectancy Outcome Theory, individuals consume alcohol in order to obtain a certain effect. Individuals that possess high positive expectancies (i.e., enhanced social functioning) and low negative expectancies (i.e., physical/cognitive impairment) are more likely to increase their level of alcohol consumption (Jones et al., 2001). Conversely, those individuals that possess low positive expectancies and high negative expectancies are less likely to engage in drinking behaviors.

One study by Carey (1995) examined the ability of alcohol expectancies to predict drinking behaviors in one hundred forty college undergraduates. Results found that expectations of global positive change predicted the maximum daily quantity of alcohol consumed, whereas sexual enhancement expectancies predicted frequency of intoxication. A similar study by Lundahl et al. (1997) examined the effects of gender, age and family history on the alcohol expectancies of college students. It was found that females over the age of 20 that endorsed a positive family history of alcohol related issues reported stronger expectancies of social and physical pleasure, and lower expectancies of global positive effects compared to all other subjects.

A study by Lewis et al. (2000) examined the impact that alcohol expectancies and social deficits have on alcohol consumption in college undergraduates. They determined that those

individuals labeled in the study as problem drinkers held more positive alcohol expectancies than non-problem drinkers. More specifically, it was found that problem drinkers expected more arousal, sexual enhancement, improvements in cognitive and motor abilities, global positive change, improvements in social behavior, and relaxation and tension reduction as a result of drinking than non-problem drinkers.

**Drinking motives.** Recent literature suggests that there is a distinct difference between alcohol expectancies and drinking motives, with research supporting the idea that drinking motives are more closely associated with drinking behaviors than alcohol expectancies (Cronin, 1997). Drinking motives refers to the assumption that individuals drink in order to attain specific valued outcomes, and that drinking behaviors are motivated by a variety of needs and serve various functions for the individual (Cooper, 1994; Cox & Kilner, 1988). For example students who suffer from social anxiety and depression may engage in drinking behaviors as a way to alleviate these feelings, thereby utilizing alcohol as a coping motive.

Kuntsche et al. (2005) examined drinking motives in adolescents and young adults by conducting a review of the literature over the last 15 years. It was determined that social motives were associated with moderate alcohol consumption, enhancement motives with heavy alcohol consumption, and coping motives with alcohol related problems. Rutledge et al. (2001) conducted a longitudinal study that examined the relationship between stress and heavy drinking while using tension-reduction drinking motives and gender as moderating factors. Results indicated that while the relationship between tension reduction drinking motives and alcohol consumption was similar for both genders initially, over the years tension reduction drinking motives became a stronger predictor of heavy alcohol consumption in males than in females.

### **Limitations of Past Research and Purpose of Proposed Study**

In order to implement appropriate interventions to address college drinking behaviors it is necessary to examine the various factors that can potentially impact a student's decision to engage in such behaviors. By examining social factors, such as peer and family influence, and cognitive predictors simultaneously, the individual and combined or additive contributions of these factors related to alcohol consumption in college students can be studied. In addition, it is important to examine gender as a variable to determine if there are varying patterns in these relations for each gender.

As mentioned previously, limitations of both past and current research on college binge drinking reveal that there is a lack of focus on the combined effects of both social and cognitive predictors, despite that they are comingled, and there is especially limited information regarding whether drinking behaviors vary by gender. The overarching purpose of the proposed study is twofold: to examine the relations between college drinking and a variety of intrapersonal and interpersonal variables such as peer influence, family influence and individual cognitive factors, and to examine whether there exist significant gender differences in these variables as they relate to college drinking. The specific research questions are:

1. What are the individual contributions of social variables (peer modeling, descriptive norms, injunctive norms, parental monitoring) in explaining variance in college drinking?
2. What are the individual contributions of cognitive variables (positive/negative outcome expectancies, drinking norms) in explaining college drinking?
3. What are the combined contributions of peer, family, and cognitive factors in explaining variance in college drinking?

4. Do social factors (i.e., family and peer) mediate the relations between cognitive factors and college drinking?
5. Do these patterns vary for each gender?

It is expected that cognitive factors, such as alcohol expectancies and drinking motives, will have a significant impact on the adoption of college drinking behaviors initially, but that these variables have the potential to be mediated by social factors such as peer and family influence. More specifically, an individual may demonstrate positive alcohol expectancies by thinking that drinking alcohol will make them more social, however if their peer group does not engage in such behaviors it is less likely that will adopt and/or continue drinking behaviors. It is also expected that these patterns will vary for males and females.

### **Significance of the Study**

Literature suggests that alcohol consumption by college students and its related consequences is one of the most serious problems plaguing college campuses across the country. Research has found that frequent alcohol consumption has the ability to negatively impact college students' academic performance, social relationships and health. In addition, only a limited number of studies have attempted to examine, and find support for, gender differences in drinking behaviors among college students. In order to design and implement effective techniques for the prevention and treatment of college drinking behaviors on college campuses, it is necessary to understand both the interpersonal and intrapersonal factors that influence these behaviors, as well as how these behaviors are mediated by gender. More specifically, specific prevention strategies may be more successful at targeting male college students as opposed to female college students, and vice versa.

## Chapter 2

### Literature Review

#### Emerging Adulthood

Emerging adulthood has been widely accepted as a distinct developmental period since its proposed inception by Arnett in 2000. Emerging adulthood is a life stage that encompasses individuals aged 18-25 and can be categorized as a period of transition whereby an individual begins taking responsibility for themselves, making their own decisions and taking on financial responsibilities independently of their parents, (Arnett, 2000). During this time frame individuals undergo identity exploration in various areas of their lives, including school, work and love. The vast majority of students enrolled in colleges and universities throughout the United States and other countries can be considered emerging adults, although there is a great deal of diversity among these individuals. Emerging adults generally pursue higher education in a non-linear fashion, with most being enrolled in classes as well as working either part-time or full-time, which can mean periods of nonattendance (Arnett, 2000). These individuals are faced with the challenge of navigating their educational future while attempting to gain financial independence and establish their own beliefs and values.

According to research, an important area for exploration is the adoption of risk taking behaviors during emerging adulthood. Literature suggests that college is a time where emerging adults are able to explore certain risky behaviors, such as substance abuse, alcohol consumption, and unprotected sexual activity without as much parental interference as they would have experienced in adolescence (Dworkin, 2005).

## **Drinking Behaviors in Emerging Adulthood**

A study conducted by Johnston et al. (2001) found that the age period from 19 to 24 is linked with the highest prevalence of periodic heavy alcohol consumption during the life span. Current literature on alcohol statistics also suggests that alcohol consumption in college aged students has become a matter of national concern due to the impending negative consequences that have been reported on a number of college campuses. Despite the harmful effects, drinking on college campuses appears to be on the rise, with current statistics reporting that approximately 73 percent of college students admit to drinking “occasionally”, (Core Institute, 2008). In addition, the Centers for Disease Control have reported that in 2010 one in four young adults, ages 18-34, engage in binge drinking (i.e., drink four or more alcoholic beverages in the span of a few hours). More specifically, research conducted by Hingson et al. (2009) on college risk-taking behaviors found that approximately 1,700 college students ranging in age from 18-24 die each year from alcohol-related unintentional injuries, and 599,000 students between the ages of 18-24 are unintentionally injured under the influence of alcohol. Hingson et al. (2002) also found that 100,000 students between the ages of 18 and 24 have had unprotected sex while under the influence of alcohol.

One of the most comprehensive studies on alcohol consumption by college students was conducted by Wechsler et al. (2001) in conjunction with the Harvard School of Public Health. The study surveyed students at a nationally representative sample of 4-year colleges in the United States four times between in 1993 and 2001, with more than 50,000 students and 120 colleges taking part in the study. The primary purpose of this study was to learn more about the type of drinking college students engage in and the ensuing consequences for both themselves and those around them. The results from the first of four studies in 1993 indicated that approximately



44 percent of college students attending a 4-year college in the United States drank at a level that constituted binge drinking (four consecutive alcoholic beverages for females and five consecutive alcoholic beverages for males). The study also indicated that those individuals that engaged in drinking behaviors were more likely to experience problems, such as “unintentional injury, sexual assault, and a decline in academic performance”, (Wechsler et al., 2000). Over the course of the next three studies (1993-2001) it was found that minimal changes occurred in student binge drinking. More specifically, the rate of 44 percent had remained relatively constant.

Wechsler et al. (2002) conducted further research in order to emphasize the increasing prevalence and negative consequences of alcohol consumption among college students ages 18 through 24. Data for the study was gathered previously during the College Alcohol Study (1999), which included self-report assessments that determined the students’ patterns of alcohol and drug use in addition to questions that assessed alcohol-related health risks and problem behaviors. In addition, the study included a questionnaire designed to indicate DSM-IV criteria for a diagnosis of alcohol abuse or dependence (based on self-report) during the year prior to the survey. Results found that 30% of the students sampled reported one or more symptoms of alcohol abuse, and more than 40% reported one or more symptoms of either abuse or dependence, (Wechsler et al., 2002).

Another important study that has gained nationwide recognition is Monitoring The Future, a longitudinal study that examines the behaviors, attitudes and values of students ranging from secondary school students through college and young adults. This study, beginning in 1975, was implemented by the National Institute on Drug Abuse in collaboration with the University of Michigan Survey Research Center, and is a recurring series of surveys in which the

same sector of the population (8th, 10th, and 12th graders; college students; and young adults) are given same set of questions over a period of years to see how answers change over time.

Results from the 2011 survey indicated that 36% of college students and 37% of young adults reported drinking at least 5 or more drinks in a row at least once in the prior two week period preceding the survey. Although this rate has decreased from 2006, researchers still report that college students continue to stand out as having a relatively high rate of binge drinking, (National Survey Results on Drugs Use, 1975–2011). In regard to gender differences, results indicated that 43% of college males reported having five or more drinks in a row over the previous two weeks versus 32% of college females.

Results from the previously mentioned studies are alarming and support the notion that emerging adulthood is a developmental stage whereby college students engage in sensation seeking behaviors that have the potential to lead to dangerous outcomes. Literature indicates that transitioning into college culture leads to increased exposure to new and exciting behaviors, and emerging adults are presented with opportunities for risk without awareness, (Horvath et al., 1993). This leads to increased concern for both parents and educational institutions in regard to ways to prevent negative outcomes for emerging adults.

### **Drinking Behaviors and Gender**

Although the negative impact of college drinking is considered to be a matter of national concern at the present, the topic of college student drinking behaviors has been a long standing area of interest in the field of social research. More specifically, the relationship between college student drinking and gender has been explored in previous studies in attempts to ascertain data that would help in the implementation of preventative programs on college campuses. According to the literature, a total of 16 surveys were conducted between 1975-1986 that

examined gender and alcohol use on college campuses. The majority of these studies focused primarily on gender differences as they relate to the frequency and quantity of alcohol consumed by college students. One such study conducted by Wechsler et al. (1979) found that twice as many females (29%) as males (15%) were categorized as infrequent-light drinkers whereas almost three times as many males (29%) as females (11%) were categorized as frequent-heavy drinkers. Another study by Berkowitz et al. (1986) examined gender differences in alcohol use and consumption from high school to college and found females experienced a greater increase in both use and consumption than did males. Results indicated that 56% of first year female students reported that their drinking had increased since high school, while only 39% of first year male students reported an increase in drinking since high school.

A study conducted by Geisner et al. (2004) examined the role of gender in alcohol use and symptoms of psychological distress in college students. The sample consisted of one thousand seven hundred five college students from three West Coast universities, and measures included The Daily Drinking Questionnaire and The Rutgers Alcohol Problem Index. Results from the study indicated that men reported greater alcohol consumption (approximately 5.99 drinks) than did women (approximately 3.56), and that men also reported experiencing more negative consequences from drinking than women.

A number of studies have focused on the relationship between gender differences and alcohol consumption in college students, however for the majority of these studies the primary focus has been on the frequency and quantity of alcohol consumed in male versus female students. Also, a number of studies have focused on the term “binge drinking”, with attempts to define this term as it relates to gender differences. For example, one study conducted by Wechsler et al. (1995) examined the relationship of volume of alcohol consumed to the

occurrence of alcohol-related problems among male and female college students, with the goal of developing a gender specific measure for binge drinking among college students. The sample used in the study was considered to be representative of full-time undergraduate students attending a four year college within the United States. The male and female students selected for the study were similar in a number of variables, including age, race, marital-status and self-rating of health. Results from this study found that women require less alcohol (four drinks in a row) than men (five drinks in a row) to qualify as a “binge drinker” but are likely to experience the same drinking-related problems as men.

A similar study by White et al. (2006) examined the patterns of alcohol use on college campuses beyond the binge drinking threshold. The sample used in this study was comprised of college freshman from 14 different colleges across the United States. Logistic regression analyses were used to explore gender differences in peak drinking levels and to determine whether frequent binge drinkers (3 or more binge episodes in a 2-week period) were more likely than infrequent binge drinkers (1 or 2 binge episodes) to consume 2 or 3 times the binge threshold. Researchers found that males were more likely to engage in drinking on college campuses (1 out of 5) than were females (1 out of 10), and that men consumed more alcohol (10+ drinks) than did females (8+ drinks) in a two week span.

A more recent study by Fillmore et al. (2011) compared the validity of two specific definitions of binge drinking in college students in attempts to identify gender differences. Participants included 251 college students categorized as either non-binge drinkers or as binge drinkers based on the 5/4 definition or the .08% Blood Alcohol Concentration (BAC) definition. Results from this study found that female binge drinkers actually had significantly higher estimated BAC's per episode than their male binge drinking counterparts, suggesting that

frequency of consumption in addition to quantity of alcohol consumed must be examined when attempting to identify problem drinking.

Those studies that do examine gender differences other than frequency and quantity of alcohol consumption in college students have produced significant findings in the role that gender plays in the adoption of drinking behaviors. One such study by Nolen-Hoeksema et al. (2002) examined correlates of alcohol use as related to drinking behaviors in males and females. More specifically, the authors focused on substance-use coping, drinking to “feel high,” and depressive symptoms as they relate to alcohol consumption in college students. The sample was comprised of 357 students from two colleges in the Midwest, ranging in age from 17-26. Results indicated that males reported more frequent alcohol use, alcohol-related problems, binge drinking, substance-use coping, and drinking to “feel high.” Alcohol-use frequency and binge drinking were both accounted for by substance-use coping and drinking to “feel high” among males and females. More specifically, alcohol-related problems were accounted for by males' frequency of alcohol use and drinking to “feel high,” whereas females' alcohol-related problems were accounted for by frequency of alcohol use and depressive symptoms. Findings suggest that drinking to “feel high” is a more relevant correlate of alcohol-related problems among males, while depressive symptomatology is a more relevant correlate of alcohol-related problems among females.

Randolph et al. (2009) examined the function that gender, along with ethnicity, played in the relationship between alcohol consumption and risky sexual behavior. In this study 425 male and female undergraduates of varying ethnicities at a southern university were sampled regarding current alcohol use and sexual history. Results from this study indicated that alcohol expectancies and alcohol use were lower among African-American women compared to both

males and other ethnic groups, and males who were older in age engaged in more frequent binge drinking and had more sexual partners than females. Findings from this study suggest that consideration of gender and ethnic differences in college students is an important factor in the development of preventative measures and reduction of alcohol consumption and other risky behaviors on college campuses.

### **Bronfenbrenner's Bioecological Systems Theory**

Problem drinking behaviors in college students has become a focal point for research due to the deleterious effects it produces for both students and the university. The urgent need for campus wide prevention programs is steadily increasing, however effective programs cannot be established without researchers having a better understanding of what variables influence the problem behavior. More specifically, how college students interact with their environment and the social and cognitive influences that they experience within that environment are of crucial importance. Bronfenbrenner's bioecological systems theory (1977) has gained a great deal of recognition in the field of human development, most notably for its emphasis on the way in which individuals interact with the elements within their environment and how these interactions impact the developmental process. This theory proposes that an individual's development throughout the lifespan is influenced by various environmental systems, and that these systems are constantly interacting in a reciprocal manner (Bronfenbrenner, 1977).

There are four primary components that build the foundation of this theory; process, person, contexts, and time. The first of these components, process (also known as proximal processes), is the bidirectional interaction between the individual and their immediate environment and is recognized as being the primary mechanism for human development, (Bronfenbrenner& Morris, 2006). In regard to the current study, the process would be the way in

which college students interact with their environment (college, home) and those in their immediate environment (peers, parents). The second component, person, can be divided into three personal characteristics; dispositions, resources, and demands. The ability of the proximal processes to influence an individual's development works in conjunction with these three characteristics. Dispositions have the ability to move proximal processes forward and to promote their longevity if they are positive, and conversely have the capability to inhibit these processes if they are negative. Resources garnered by the individual influence how an individual will engage in processes. For example, abilities, knowledge, and skill will most likely promote positive functioning of processes, whereas impulsiveness and sensation seeking will inhibit effective functioning, (Bronfenbrenner & Morris, 2006). Demand refers to characteristics that can invite or discourage reactions from the social environment and can foster or disrupt the operation of proximal processes. The third component, time, refers to how varying time periods impact how proximal processes take place. The fourth and final component, context, refers to social class (i.e., parent income, education, neighborhood SES level), (Bronfenbrenner & Morris, 2006).

In addition to the four primary components previously mentioned, there are five specific systems that this theory utilizes to better conceptualize the complexity of the developmental process. These systems are the microsystem (factors that directly impact the individual such as family, peers, school), mesosystem (interrelations between two or more microsystems), exosystem (links between factors that the individual does not have direct involvement, such as political and economic systems), macrosystem (cultural contexts that emphasize a group's beliefs and values), and chronosystem (environmental events and transitions that occur across the lifespan). Also important to distinguish is the difference between intrapersonal and interpersonal

factors as they relate to this theory. According to Bronfenbrenner (1977) those factors within a system that rely on the individuals own thoughts or cognitions are intrapersonal, whereas outside influences such as peer and parental factors would be interpersonal. As mentioned previously all of these systems interact in a reciprocal manner and play an important role in human development, however for the purpose of the current study the focus will be exclusively on microsystems and mesosystems as they explain college drinking behaviors. More specifically, this study will examine the family microsystem (parental approval of drinking behaviors and parental monitoring), peer microsystem (descriptive norms, injunctive norms, modeling), and the self microsystem (drinking norms and alcohol expectancies), as well as the overall mesosystem (the interactions of these microsystems).

In a recent study conducted by Boggs et al. (2009) Bronfenbrenner's bioecological model was used to assess alcohol consumption decision making in a sample of alcohol-dependent and non-alcohol-dependent college students. In constructing their methods, researchers utilized the concept of a microsystem in which individuals are continuously interacting with their environments and engaging in specific activities within defined settings. More specifically, researchers constructed hypothetical scenarios in which participants were asked to consider a particular individual (i.e. student, nonstudent, etc.) and asked to consider whether the individual would attend a social gathering, and if so, how much alcohol would the individual consume. Results from this study found that scenario attendance decisions were not significantly impacted by alcohol-dependence status. In addition, the results for the alcohol-consumption decisions showed alcohol-dependent individuals reported a greater frequency of deciding to drink, as well as indicating greater alcohol consumption, (Boggs et al., 2009).



## **Interpersonal Factors**

**Peer Modeling.** Social learning theory posits that individuals of varying ages have the capacity to learn (providing that certain factors are present) through observation of others (Bandura, 1986), and a great deal of research over the past several decades has proven the accuracy of this theory. One component necessary for successful social learning is the presence of a model that has characteristics that are similar to the individual that is observing the behavior. For this reason peer groups quite often serve as effective models, as they are readily present and often share commonalities amongst members. In regard to college students, a great deal of time is spent surrounded by peers in various settings, including classroom, dorms, and social gatherings. Research has found that certain behaviors, such as alcohol consumption by peers, has the potential to influence the adoption of such behaviors by an individual.

Borsari et al. (2001) conducted a review of the research on peer influences on college drinking, examining modeling as an indirect form of peer influence. Specifically, 13 studies were selected for review as they all involved the participation of college students and shared a similar format. Participants in each study were paired with another student (model) that was trained to consume alcohol at a specified pace (heavy or light). A modeling effect has occurred if the participant's alcohol consumption matches that of the model. Overall, the modeling research indicates that participants exposed to heavy-drinking models consume more than students exposed to light drinking models or no models at all. In regard to the influence of gender, researchers also compared same-sex and mixed-sex dyads, and found that the consumption of alcohol in same-sex male dyads was more extreme than in same-sex female dyads or mixed-sex dyads, (Cooper et al., 1979).

**Descriptive Norms.** Research has found that increases in student alcohol consumption may be linked to biased perception in drinking norms, (Ham et al., 2003). More specifically, students' overestimation of peer alcohol use, also known as descriptive norms, can lead to an increase in their own alcohol consumption. Descriptive norms are typically culminated through the evaluation of normative information from three primary sources: observable behaviors, direct and indirect communications, and knowledge of the self, (Miller et al., 1996). Observable behavior is the easiest to attain as students often spend the majority of their time at college in the presence of their peer groups. Observing peers consuming large amounts of alcohol at a campus party may lead an individual to believe that this behavior is normative, even if this type of behavior is isolated. This in turn can lead to an increase in the amount of alcohol that a student consumes at social events. In regard to direct (what words mean) and indirect (what words imply) communication, information can be either intentionally or unintentionally distorted which can lead to misinformation about the amount of alcohol one consumes, (Borsari et al., 2003). Lastly, knowledge of self, or personal attitudes and behaviors, can impact how one perceives information. Students who believe that drinking large amounts of alcohol in social settings is acceptable are more likely to perceive this as the norm for their peer group as well.

Neighbors et al. (2004) attempted to target misperceptions of descriptive norms utilizing a normative feedback intervention. In this study 252 college students were randomly assigned to an intervention or control group following a baseline assessment. The procedure included baseline assessment, intervention, 3-month follow-up, and 6-month follow-up. Measures included The Alcohol Consumption Index, Drinking Norms Rating Form, and The Daily Drinking Questionnaire. Those students assigned to the intervention group received personalized normative feedback via the computer following completion of the baseline assessment. This

feedback included a summary of the participant's perceived drinking norms compared with actual drinking norms and a summary of students' reported consumption compared with average college drinking behavior. Results indicated that normative feedback was effective in changing perceived norms and alcohol consumption at 3- and 6-month follow-up assessments.

Similarly, a literature review conducted by Lewis et al. (2006) examined descriptive drinking norms and the use of personalized normative feedback. It was found that college students display a tendency to overestimate heavy alcohol consumption by their peers, and this misperception has been suggested as a causal factor of increased alcohol consumption among college students, (Nye et al., 1999).

A study by Larimer et al. (2004) examined the role of descriptive norms in predicting drinking behaviors in college students involved in the Greek system. Participants included 279 men and 303 women recruited from incoming pledge classes of 12 fraternities and 6 sororities, who completed measures of social norms, alcohol use, and consequences. Results from this study indicated that descriptive norms serve as an important predictor of drinking behavior, and were significantly correlated with both current and 1-year self-reported drinks per week as well as with current and 1-year short-term negative consequences and dependence symptoms.

Another study by Grossbard et al. (2009) explored the impact of athletic identity on descriptive norms of drinking behaviors in student athletes transitioning to college. Participants included 1119 incoming freshman from two major universities. Prior to beginning their first term, participants completed assessments of athletic identity, alcohol consumption, drinking-related consequences, and normative perceptions of alcohol use. Results indicated that participants' perceptions of drinking by college students and student-athletes were significantly greater than

self-reported drinking, and that athletic identity served as a moderator for associations among gender, perceived norms, drinking, and related consequences.

In regard to the impact of gender on descriptive norms, one study by Lewis et al. (2004) examined gender specific misperceptions of college student drinking norms. The primary goal of this study was to examine gender differences in the misperceptions of same-sex perceived norms (perceptions of typical drinking by same-sex peers) and opposite-sex perceived norms (perceptions of typical drinking by opposite-sex peers). Participants included 226 (51% women, 49% men) students from undergraduate psychology classes, and approximately 80% of the sample reported drinking at least once in the 3 months prior to the study. Measures included The Drinking Norms Rating Form, Alcohol Consumption Index, Daily Drinking Questionnaire, and The Rutgers Alcohol Problem Index. Results of this study indicated that men overestimate the drinking of their male peers and that women overestimate the drinking of their female peers, and that perceived same-sex norms appear to be more strongly associated with heavy drinking than perceived gender-nonspecific drinking norms.

**Injunctive Norms.** Similar to descriptive norms, injunctive norms (students' perceptions of approval of alcohol consumption), are an important factor in the adoption of drinking behaviors in college students. Injunctive norms can be associated with a number of referent groups, however for the purpose of this study we will be focusing on the most distal and influential groups: peers/close friends and parents.

A study conducted by LaBrie et al. (2010) examined the relationship between injunctive norms and alcohol consequences in college students. Specifically, researchers sought to evaluate the influence of varying levels of specificity of the reference group (i.e., personal attitudes, peers, parents, close friends, etc.) on the relationship between injunctive norms and alcohol-related

problems, controlling for overall alcohol use, within a large representative sample from two college campuses. Results from this study found a significant relationship between injunctive norms for close friends, parents, self, and alcohol-related problems, however the most powerful predictor of alcohol related problems was perceived approval of drinking by close friends.

Another study by Neighbors et al. (2011) examined confidence as a moderator among the associations between perceived injunctive norms, one's own attitude, and drinking. Participants included 708 undergraduate students from a large public university who were previously enrolled in a longitudinal web-based alcohol intervention study. Results indicated that injunctive norms were the most significant predictors of drinking, and that confidence did serve as a moderator of the relationship between perceptions of others' approval (injunctive norms) and behavior.

Nguyen et al. (2012) examined racial differences in the associations among self-determination, injunctive norms and drinking in Caucasian and Asian American college students. Participants included 732 undergraduates enrolled at a large public West Coast university who reported at least one heavy drinking episode (4 consecutive drinks for females and 5 consecutive drinks for males) in the previous month. Participants were required to complete self-report measures assessing self-determination, perceived parental/peer injunctive norms, and drinking. Results indicated that peer injunctive norms served as a mediator between controlled orientation and increased number of drinks consumed per week exclusively for Caucasians. Results also found that Asian Americans drank less and perceived their peers to be less approving of drinking. Conversely, Caucasians viewed their friends as being significantly more approving of alcohol and consumed significantly more drinks per week.

DeMartini et al. (2011) examined the effects of gender and year in school on injunctive norms and alcohol related consequences. Participants included 324 undergraduates attending a

large northeastern university, and were required to complete online surveys about alcohol consumption, alcohol related problems, self and other attitudes towards drinking consequences, and self and other attitudes towards protective behavior strategies. Results from this study indicate that students perceive that their friends are more comfortable with the general level of drinking on campus than are the students themselves. Students perceive themselves to be equivalent in comfort level to the average student on campus. In addition, relative to male students, female students reported lower personal approval of alcohol-related consequences as well as lower perceptions of approval by others.

**Parental Monitoring.** With the current demands of today's society, it is difficult for parents to identify the daily activities and whereabouts of their teenagers, however parental monitoring in adolescence has been found to be a key predictor of the risk taking behaviors in later years (Chilcoat et al., 1996). A study conducted by Aquilino et al. (2001) examined the long-term effects of certain parental practices during adolescence on well-being in emerging adulthood. Sampling and data for this study was extracted from an existing data set belonging to a longitudinal study that began in 1987 by the National Survey of Families and Households. Results from this study found that higher levels of parental restrictiveness-supervision (monitoring) during adolescence were associated with lower levels of self-reported drinking and binge drinking in emerging adulthood.

Another longitudinal study conducted Abar et al. (2008) examined the indirect influences that particular parenting practices have on alcohol use in college. Participants consisted of 392 freshmen attending college in the United States. Participants completed measures assessing their perceptions of their parent's knowledge of their lives, monitoring behaviors, and approval of alcohol use prior to the first semester of college. Results from this study indicated that

students' whose parents were aware of how they spent their free time and what type of leisure activities they engaged in were less likely to consume large amounts of alcohol and were less likely to associate with heavy drinking peers in college.

Arria et al. (2008) conducted a longitudinal study that examined whether parental monitoring indirectly provides a protective effect on college drinking by reducing high school alcohol consumption. Participants included 1,253 male and female college students from a large public university. Assessments of parental monitoring and alcohol consumption were conducted the summer prior to the participants' entry into college, and alcohol consumption was assessed again during their first year in college. Results found that parental monitoring provided an indirect influence on college drinking behavior by reducing levels of high school alcohol consumption.

Results from the previously mentioned studies indicate that parental monitoring in adolescence and throughout emerging adulthood may be a protective factor in the development and maintenance of drinking behaviors. This may be due to the fact that parents that are aware of their child's whereabouts and daily activities are more likely to engage in open communication with their child regarding various topics, such as alcohol consumption. Parents that are aware that drinking alcohol is an issue in their child's social environment (either in high school or college) can more effectively implement abstinence discussions.

**Positive and Negative Alcohol Expectancies.** Alcohol expectancies refer to beliefs about the cognitive, affective or behavioral effects of alcohol use and can be both positive (e.g. 'drinking makes me more social') and negative (e.g. 'when I drink, I have a tendency to say things that I will regret afterwards'), (Jones et al., 2001). Alcohol expectancies vary from individual to individual and are contextual in nature, (Leigh, 1989; Connors, Maisto, & Derman,

1992). Research suggests that individuals who demonstrates positive alcohol expectancies typically consume larger amounts of alcohol, drink more frequently, and show more signs of problem drinking, (Fromme et al., 1993; Werner, Walker, & Green, 1993; Christiansen et al., 1989).

One study conducted by Lewis et al. (2000) examined the relationship between alcohol expectancies, social deficits and alcohol consumption in college students. Participants included 113 college students recruited from lower-level psychology courses that were required to complete a series of questionnaires that measured alcohol use patterns, alcohol expectancies, and social functioning. Results from this study indicated that those individuals identified as problem drinkers held more positive alcohol expectancies. More specifically, problem drinkers expected arousal, sexual enhancement, improvements in cognitive and motor abilities, global positive change, improvements in social behavior, and relaxation and tension reduction as a result of drinking alcohol.

A study by Gilles et al. (2006) examined alcohol expectancies, in addition to social anxiety and self-efficacy, as predictors of heavy drinking in college students. Participants included 118 undergraduate students that completed a series of measurements including the Comprehensive Effects of Alcohol questionnaire, the Social Phobia Scale, and the Alcohol Use Disorder Identification Test. Results from this study indicated that college students that self-reported high levels of social anxiety, low levels of refusal self-efficacy and positive alcohol expectancies consumed more alcohol. This suggests that both positive alcohol expectancies and refusal self-efficacy, when displayed together, are important variables related to drinking behaviors in college students.



Hasking et al. (2011) examined the relationship between alcohol expectancies, coping strategies, drinking motives and drinking behavior. Participants included four hundred fifty four undergraduate college students who completed self-report questionnaires. Results found that the relationship between avoidant coping and drinking behavior was mediated by positive alcohol expectancies (increased confidence, tension reduction), which in turn were related to drinking motives. Also, drinking motives were found to be positively related to drinking behavior, and negative alcohol expectancies were found to be directly related to drinking behavior.

**Drinking Motives.** Drinking motives are considered to be one of the underlying components that contribute to the adoption of drinking behaviors in college students (Cooper, 1994). Research has suggested that drinking motives can be divided into positive motives (affect enhancement, social rewards and conformity) or negative motives (coping) in emerging adulthood (MacLean et al., 2000). Among the positive drinking motives, affect enhancement motives refers to the concept of drinking in order to improve one's mood or to elicit positive emotion, social rewards motives consists of drinking in order to have a more positive social experience, and conformity motives refers to drinking in order to fit in with one's peers or to be accepted by a particular social group (Cooper, 1994). As for negative drinking motives, coping motives refers to drinking in order to lessen or suppress specific negative emotions, such as depression or anxiety.

A study by Neighbors et al. (2004) examined the relationship between drinking motives and controlled orientation in college students, with self-esteem as a mediating factor. Specifically, this study sought to examine the association between an individual's propensity towards having a lack of choice in their behavior and drinking motives such as social rewards and affect enhancement, and how this relationship is impacted by one's self-esteem. Participants

included two hundred four undergraduate students enrolled in psychology classes at the University of Washington. Measures included questionnaires that surveyed controlled orientation, drinking motives, and alcohol consumption. Results indicated that there is a positive association between controlled orientation and drinking motives, and the relationship between controlled orientation and drinking motives was partly mediated by self-esteem, especially for affect enhancement motives.

Another study by LaBrie et al. (2012) examined the relationship between drinking motives and alcohol related outcomes, and whether this relationship was mediated by college adjustment. Participants included two hundred fifty three college students that were required to complete several self-report questionnaires that examined drinking motives, college adjustment, alcohol consumption and alcohol-related outcomes. Results found that positive reinforcement drinking motives (affect enhancement/social rewards) demonstrated both a direct and indirect relationship with alcohol related consequences, and that these motives were related to positive college adjustment. Additionally, a stronger positive reinforcement motive was related to better college adjustment and fewer alcohol related outcomes.

Clerkin et al. (2012) studied the influence of drinking motives and social anxiety symptoms in predicting drinking outcomes. Participants included seven hundred thirty undergraduate college students who completed self-report measures regarding social anxiety symptoms, drinking motives, alcohol consumption, and drinking problems. Results indicated that there were significant interactions between social anxiety and drinking motives, and that alcohol consumption was most prominent in individuals who endorsed high enhancement motives and low social anxiety symptoms. In addition, drinking problems were found to be

more significant for those individuals that had low coping drinking motives and high social anxiety symptoms.

In regard to gender differences, a study by LaBrie et al. (2011) examined whether the relationship between drinking motives and alcohol consumption was mediated by protective behavior strategies (cognitive-behavioral techniques used to decrease drinking behaviors). Participants included one thousand five hundred ninety two college undergraduates (49.9 % male, 50.1% female) from two universities that completed online surveys regarding drinking motives, protective behavior strategies, and alcohol consumption. Results found that females were significantly more likely to use protective behavior strategies than males. In addition, it was determined that males consume more alcohol per sitting, more frequently, and over longer periods of time than females. It was determined that no gender differences in drinking motives emerged, suggesting that males and females were equally motivated to drink.

## Chapter 3

### Method

#### Participants

Participants for this study included 250 college students from a large Midwestern university, ranging in age from 18-25. This population was selected because research suggests that it is an important phase of the life span that is marked by exploration of both personal and social responsibilities. The sample size for this study was determined from a power analysis with 95% power to detect a change in  $R^2$  of 5% with an alpha level of .05. All participants from this study completed a brief demographic questionnaire, results are summarized in Table 1. Of the 250 students that participated the majority were female (n=142, 56.8%). The sample included various different ethnic groups, including African American (n=59, 23.6%), Caucasian (n=112, 44.8%), Asian/Pacific Islander (n=19, 7.6%), Hispanic (n=7, 2.8%), Middle Eastern (n=25, 10%), and Other (n=28, 11.2%). In regard to year in school the majority of the sample identified themselves as being either a Junior (n=70, 38%) or Senior (n=62, 24.8%), and most participants reported a GPA of 3.5 (n=89, 35.6%).

Table 1  
*Frequency Distributions-Demographic Characteristics of the Students*

Demographic Characteristics (n=22)	Number	Percent
<u>Gender</u>		
Male	108	43.2
Female	142	56.8
<u>Race/Ethnicity</u>		
White/Caucasian	112	44.8
African-American	59	23.6
Middle Eastern	25	10
Asian/Pacific Islander	19	7.6
Hispanic	7	2.8
Other	28	11.2
<u>Year in School</u>		
Freshman	32	12.8
Sophomore	53	21.2
Junior	70	28.0
Senior	62	24.8
Graduate	26	10.4
Other	7	2.8
<u>GPA</u>		
4.0	52	20.8
3.5	88	35.2
3.0	79	31.6
2.5	21	8.4
2.0	7	2.8
Under 2.0	3	1.2
<u>Major</u>		
Social Science	26	10.4
Arts and Humanities	17	6.8
Psychology	47	18.8
Engineering	16	6.4
Other	144	57.6
<u>Religion</u>		
Catholic	67	26.8
Jewish	9	3.6
Orthodox	10	4.0
Muslim	30	12.0
Protestant	15	6.0
Baptist	32	12.8
Other	87	34.8
<u>Importance of Religion</u>		

Very Important	94	37.6
Moderately Important	77	30.8
Mildly Important	35	14.0
Not Important	44	17.6

---

## Measures

**Drinking behaviors.** The Student Alcohol Questionnaire (SAQ) is a 70-item questionnaire (Engs 1977; Hanson 1972) that evaluates drinking patterns in college students. The SAQ contains 6 questions regarding amount and frequency of alcohol consumption, and 17 questions regarding drinking behaviors (Have you ever “had a hangover”, “participated in a drinking game”). This questionnaire also incorporates a knowledge scale, but for the purpose of this study only the two above mentioned scales were utilized.

As part of this instrument's development, it was subject to face validity by a panel of experts and by college students (Engs, 1977). A panel of professionals currently working in the field of alcohol education and research remarked on various items under consideration for the questionnaire. A preliminary questionnaire was assembled and presented to a number of students for their feedback and suggestions; the questionnaire was then revised and resubmitted to the panel. After continued revision, the questionnaire was resubmitted to the students for final evaluation. These procedures were used to determine the validity of the content of the questionnaire.

The SAQ has also been found to have adequate reliability. Out of the 23-items that assess drinking patterns, the six items that assess the quantity or frequency index of drinking beer, wine and spirits received a reliability coefficient of .84 for the equal-length Spearman-Brown test. The Cronbach alpha was .86, and the reliabilities of the individual items ranged from .50 to .73 for this subscale (Engs& Hanson, 1994). The 18 questions on the drinking behaviors

subscale received an equal-length Spearman-Brown reliability coefficient of .89, a Cronbach alpha of .92, and an analysis of the reliabilities ranged from .54 to .75 (Engs & Hanson, 1994). Overall the Student Alcohol Questionnaire appears to be a reliable instrument for measuring college students' alcohol consumption patterns, problems related to their alcohol consumption, their knowledge of alcohol, and their attitudes towards drinking. Further, many researchers have used this instrument (Sobell & Sobell, 1978). For the current sample, the Cronbach's alpha ranged from .91 to .97.

**Alcohol expectancies.** A brief version of the Comprehensive Effects of Alcohol Questionnaire (B-CEOA; Addictive Behaviors Research Center, 1997) was used to assess participants' alcohol-related response expectancies. The B-CEOA consists of 15 items that were derived from the original full-scale CEOA developed by Fromme, Stroot, and Kaplan (1993). The full-scale CEOA uses 38 items consisting of a total of 7 factors, 4 positive (Sociability, Tension Reduction, Liquid Courage, and Sexuality) and 3 negative (Cognitive and Behavioral Impairment, Risk and Aggression, and Self-Perception). Individuals indicate their degree of agreement that a particular effect will likely occur if they drink, using a 1-4 scale (1 = disagree, 4 = agree) in response to various questions (i.e., "After a few drinks of alcohol, I would be more likely to be courageous", "After a few drinks of alcohol, I would be more likely to feel calm"). The B-CEOA includes 2 items from each of the original 7 expectancy scales, except for the Risk and Aggression scale, which contains 3 items.

According to Fromme (1993) the CEOA demonstrates good construct and criterion-related validity. Validity was tested using multiple regression analysis of each of the alcohol use measures (frequency, quantity, weekly consumption) on all four factors (Positive Expectancy,

Positive Value, Negative Expectancy, Negative Value). Results indicated good construct and criterion-related validity for both negative and positive factors.

The subscales of the full CEOA have demonstrated internal reliabilities ranging from .59 to .89 (Fromme & D'Amico, 2000). In addition, a comparison of the B-CEOA to the full-scale CEOA showed that, although the number of items was reduced, internal consistencies after principle components analyses were conducted remained adequate to good: the full-scale CEOA had Cronbach's alphas ranging from .66 to .84 and the B-CEOA had Cronbach's alphas ranging from .60 to .81 (Ham, Stewart, Norton, & Hope, 2005). Questions within the B-CEOA assessed both the positive and negative response expectancies of alcohol consumption. For the current sample, the Cronbach's alpha ranged from .79 to .89.

**Drinking motives.** The Drinking Motives Questionnaire-Revised (DMQ-R) (Cooper, 1994) is a 20-item measure that evaluates motives for engaging in alcohol consumption. More specifically, four important motives for alcohol consumption are assessed; coping, enhancement, conformity and social motives. Each of the four motives is examined by means of source (internal vs. external) and manner of reinforcement (positive vs. negative). Response options range on the DMQ-R from 1 (almost never/never) to 5 (almost always/always). Participants are asked to indicate how frequently each of the listed reasons motivates them to drink alcoholic beverages. Sample items of the DMQ-R include "To forget your worries" and "Because your friends pressure you to drink". The measure yields three scale scores reflecting different motives for drinking alcohol.

The DMQ-R has been reported to have adequate construct and criterion validity when used within college student populations. In regard to construct validity, research conducted by Martens et al. (2008) found a good fit for the four factor model (IFI = .92, CFI = .92, RMSEA =



.07). When examining criterion validity, Martens et al. (2008) found significant associations among drinking motives and alcohol use and alcohol-related problems in a college student sample, reporting that the motives accounted for between 1% and 17% of the variance in alcohol use measures and from 8% to 22% of the variance in alcohol-related problems.

The 5-item subscales of the DMQ-R, which are computed by averaging the sum of all items on each scale, have been found to be highly internally consistent, with Cronbach's alphas ranging between .86 (coping) and .89 (enhancement), (Kuntsche, Stewart, & Cooper, 2008). Although the majority of existing norms for this measure were drawn from adolescent samples (e.g., Cooper, 1994; Kuntsche et al., 2008), Stewart and Devine (2000) provide normative data for college-aged drinkers. Using a sample size of 256 college students, the authors found that the Coping Motives subscale had a mean of 1.77 ( $SD = 0.77$ ), the Enhancement Motives subscale had a mean of 2.89 ( $SD = 1.05$ ), the Conformity Motives subscale had a mean of 1.35 ( $SD = 0.51$ ), and the Social Motives subscale had a mean of 3.22 ( $SD = 0.91$ ). The 5-item Coping Motives subscale had a mean of 2.20 ( $SD = 0.95$ , range = 1 - 5) and this subscale demonstrated good to excellent reliability (Cronbach's alpha = .89; Cronbach, 1951) in the present sample. The 5-item Enhancement Motives subscale had a mean of 3.08 ( $SD = 1.09$ , range = -1 - 25) and demonstrated good to excellent reliability (Cronbach's alpha = .88) in the present sample. The 5-item Conformity Motives subscale had a mean of 1.68 ( $SD = 0.82$ , range = 1 - 5) and this subscale was demonstrated to have good to excellent reliability (Cronbach's alpha = .89) in the present sample. The 5-item Social Motives subscale had a mean of 3.56 ( $SD = 0.94$ , range = 1 - 5) and this subscale was demonstrated to have good to excellent reliability (Cronbach's alpha = .86) in the present sample. For the current sample, the Cronbach's alpha ranged from .93 to .97.

**Social Modeling.** A 2-item questionnaire was created to assess peer alcohol behaviors. This questionnaire asks participants to indicate how many of their friends “drink beer, wine, and liquor on a fairly regular basis?” and how many of their friends “drink beer, wine, and liquor from time to time?”. Response options range from “None” to “All of them”. For the current sample, the Cronbach’s alpha was .71.

**Descriptive Norms.** A modified version of the Drinking Norms Rating Form (DNRF) (Baer et al., 1991) was used to assess descriptive norms. The modified version is a 3-item self-report instrument, adapted from the original 15-item questionnaire, assessing students’ perceptions of alcohol use among their peers. The modified DNRF asks participants to consider the typical week during the past month, and has student’s “indicate the typical number of drinks you usually consume on that day, and the typical number of hours you usually drink that day”. The participants are also asked to estimate the number of drinks a typical university student usually consumes, as well as the number of drinks their best friends usually consume.

In a previous study using the original DNRF, participants’ estimates of the amount of alcohol consumed by their peers was highly correlated with their own drinking, demonstrating evidence of criterion validity (Baer, Stacy, & Larimer, 1991). In addition, studies of the original DNRF have found it has both face validity and predictive utility. In one study (Broadwater, et al, 2006), the DNRF had a test-retest reliability of .69.

**Injunctive Norms.** Injunctive norms for perceived approval of drinking were assessed using a measure developed by Baer (1994). Participants were asked to respond to four items assessing perceptions of their friends’ approval of their alcohol use and four items assessing perceptions of parents’ approval of their alcohol use. The items asked about perceived approval of drinking alcohol every weekend, drinking alcohol daily, driving a car after drinking, and

drinking enough alcohol to pass out (e.g., “How would your friends feel if you drank alcohol every weekend?”). Response options ranged from 1 = strong disapproval to 7 = strong approval.

This measure created by Baer (1994) has been found to have adequate reliability. The four items for each referent are averaged to create one variable of participants’ perceptions of friends’ overall approval ( $\alpha = .72$ ) and perceptions of parents’ overall approval of risky alcohol use ( $\alpha = .69$ ). For the current sample, the Cronbach’s alpha ranged from .80 to .81.

No formal information regarding validity has been published, however, the items appear to have good face validity.

**Parental Monitoring.** The Parental Monitoring questionnaire was modified from a parental monitoring measure developed by Stattin and Kerr (2000). The original questionnaire attempts to measure parents’ knowledge of the participant’s whereabouts, activities, and associations when they were in high school, using both child and parent reported data. The modified questionnaire utilizes only child-report items, and using a 5-point Likert scale ranging from 1 (never) to 5 (always) asks participants to answer nine questions, such as “Do your parents know what you do during your free time?”.

Means were calculated for the child-report items ( $\alpha$  reliability = .86). The test-retest reliability for child-reported monitoring was found to be significant,  $r(36) = .83$ . For the current sample, the Cronbach’s alpha was .85.

## **Procedure**

Data collection occurred in using two different methods. In the first method participants were approached during either the beginning or end of their classroom lecture and asked if they would like to volunteer their time and participate in a survey. The subjects were informed that the research project was being conducted through Wayne State University and that the topic of

the study was the relationship between college drinking behaviors and peer, family and cognitive influences, paying particular attention to gender differences. Students were informed that their participation was strictly voluntary and would not in any way impact their grade in the class. Students were also informed that those that chose to participate in the study would have their name entered into a random drawing to win a gift card, and that the drawing would take place after all participants had turned in their surveys. Participants who were willing were given an information sheet, as no identifiers were collected during this study. Those who did not wish to participate were free to leave the classroom. Participants were then asked to fill out several questionnaires in order to collect relevant data about the variables being measured.

The second method of data collection occurred in the student center, where a table was set up with a poster board advertising the study. Participants that wished to participate were given the questionnaires to fill out, and upon completion the students were able to pick out a \$5 gift card to their choice of three different franchises.

Table 2

*Statistical Analyses*

Preliminary Analyses	Variables	Statistical Analysis
Due to literature suggesting gender differences in some of the study variables, this will first be tested.	<u>Independent Variable</u> Gender  <u>Dependent Variables</u> <ul style="list-style-type: none"> <li>• Peer Modeling</li> <li>• Descriptive Norms</li> <li>• Injunctive Norms</li> <li>• Parental Monitoring</li> <li>• Positive/Negative Alcohol Expectancies</li> <li>• Drinking Motives</li> </ul>	Multivariate Analysis of Variance (MANOVA) will be used to test for potential gender differences in each dependent variable.  If gender is found to be statistically significant it will be added as a control variable for subsequent analyses.
RQ#1: What are the individual contributions of social variables (peer modeling, descriptive norms, injunctive norms, parental monitoring) in explaining variance in college drinking?		
Hypotheses:  H1: The individual contributions of social variables will explain a statistically significant proportion of variance in college drinking.	<u>Predictor Variables</u> Social Factors <ul style="list-style-type: none"> <li>• Peer Modeling</li> <li>• Descriptive Norms</li> <li>• Injunctive Norms</li> <li>• Parental Monitoring</li> </ul> <u>Criterion Variable</u> College Drinking	Multiple Linear Regression Analysis
RQ#2: What are the individual contributions of cognitive variables (positive/negative outcome expectancies, drinking norms) in explaining college drinking?		
H2: The individual contributions of cognitive variables will explain a statistically significant proportion of variance in college drinking.	<u>Predictor Variables</u> Cognitive Factors <ul style="list-style-type: none"> <li>• Positive/Negative Alcohol Expectancies</li> <li>• Drinking Motives</li> </ul> <u>Criterion Variable</u> College Drinking	Multiple Linear Regression Analysis
RQ#3: What are the combined contributions of peer, family, and cognitive factors in explaining variance in college drinking?		

<p>H3: A combination of social and cognitive factors will explain more of the variance in college drinking than either set of factors alone.</p>	<p><u>Predictor Variables</u></p> <p>Social Factors</p> <ul style="list-style-type: none"> <li>• Peer Modeling</li> <li>• Descriptive Norms</li> <li>• Injunctive Norms</li> <li>• Parental Monitoring</li> </ul> <p>Cognitive Factors</p> <ul style="list-style-type: none"> <li>• Positive/Negative Alcohol Expectancies</li> <li>• Drinking Motives</li> </ul>	<p>Hierarchical Linear Regression Analysis</p> <p>Cognitive factors entered on step 1 Social factors entered on step 2</p>
<p>RQ#4: Do social factors (i.e., family and peer) mediate the relations between cognitive factors and college drinking?</p>		
<p>H4: Social factors (family, peer) will mediate the relations between cognitive factors and college drinking.</p>	<p><u>Predictor variables (cognitive factors)</u></p> <ul style="list-style-type: none"> <li>• Positive/Negative Alcohol Expectancies</li> <li>• Drinking Motives</li> </ul> <p><u>Mediating Variables</u></p> <ul style="list-style-type: none"> <li>• Peer Modeling</li> <li>• Descriptive Norms</li> <li>• Injunctive Norms</li> <li>• Parental Monitoring</li> </ul> <p><u>Dependent Variable</u></p> <p>College Drinking</p>	<p>Barron &amp; Kenny's four step mediation analyses will be run using multiple linear regression analysis. A total of 8 separate 4 step mediation analyses will be run.</p>
<p>RQ#5: Do these patterns vary for each gender?</p>		
<p>H5: These patterns will vary by gender.</p>	<p>If the results of preliminary analyses are such that there are significant gender differences, some questions will be answered by running analyses separately for males and females and/or gender will be controlled for in analyses.</p>	

## **Chapter 4**

### **Results**

The purpose of this study was to examine various social and cognitive factors, within the context of an ecological model, which could potentially contribute to the variance in college drinking. The four social factors examined in this study were peer modeling, descriptive norms, injunctive norms and parental monitoring (at the microsystem level). The cognitive factors included were positive and negative alcohol expectancies and drinking norms. This study also examined the possibility social factors serving as mediators between cognitive factors and college drinking. In addition, this study sought to determine whether any of these patterns varied by gender. Descriptive statistics, including means and standard deviations for all variables, are included in Table 3. Correlations among primary variables are presented in Table 4.

Table 3  
*Descriptive Statistics-Scaled Variables*

Scaled Variables	Mean	SD	Min	Range*	
				Max	
<u>Drinking Behaviors</u>					
Quantity/Frequency	2.6	2.2	0.5		12.5
Beh. Problems	1.7	1.0	1.0		5.0
<u>Alcohol Expectancies</u>					
Sociability/LC/RA	2.7	0.9	1.0		5.0
Self Perception/Cog/Beh Impair	2.5	0.9	1.0		5.0
Sexuality	2.2	1.1	1.0		5.0
Tension Reduction	2.4	1.0	1.0		5.0
<u>Drinking Motives</u>					
Social	2.6	1.3	1.0		5.0
Coping	1.9	0.9	1.0		5.0
Enhancement	2.1	1.0	1.0		5.0
Conformity	1.6	0.8	1.0		4.8
<u>Descriptive Norms Total</u>					
Self	4.3	5.6	0.0		39.0
WSU Student	12.1	8.7	0.0		55.0
Best Friends	7.6	7.9	0.0		39.0
<u>Injunctive Norms</u>					
Friends	2.2	1.1	1.0		5.8
Parents	1.5	0.7	1.0		5.8
<u>Peer Modeling</u>					
Peer Modeling	2.4	0.8	1.0		4.0
<u>Parental Monitoring</u>					
Parental Monitoring	3.5	.09	1.4		5.0



Table 4

*Intercorrelation Matrix for All Study Variables (n=250)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1															
2	0.83**	1														
3	0.56**	0.52**	1													
4	0.18**	0.19**	0.27**	1												
5	0.55**	0.55**	0.63**	0.37**	1											
6	0.54**	0.52**	0.42**	0.13*	0.42**	1										
7	0.55**	0.56**	0.60**	0.27**	0.65**	0.65**	1									
8	-0.15*	0.17**	-0.15*	-0.05	0.22**	0.18**	0.22**	1								
9	0.42**	0.44**	0.26**	0.27**	0.29**	0.23**	0.33**	-0.13*	1							
10	0.03	0.06	0.01	0.10	0.02	0.01	-0.01	-0.13*	0.50**	1						
11	0.43**	0.44**	0.34**	0.19**	0.30**	0.25**	0.29**	-0.14*	0.55**	0.19**	1					
12	0.35**	0.29**	0.33**	0.11	0.21**	0.27**	0.33**	-0.03	0.53**	0.17**	0.57**	1				
13	0.66**	0.70**	0.52**	0.19**	0.51**	0.49**	0.54**	-0.10	0.44**	0.04	0.50**	0.39**	1			
14	0.54**	0.61**	0.44**	0.21**	0.48**	0.41**	0.46**	-0.10	0.35**	0.10	0.42**	0.28**	0.76**	1		
15	0.64**	0.70**	0.51**	0.21**	0.53**	0.48**	0.54**	-0.12	0.40**	0.08	0.46**	0.30**	0.86**	0.84**	1	
16	0.42**	0.48**	0.36	0.16*	0.38**	0.29**	0.36**	-0.10	0.28**	0.13*	0.34**	0.17**	0.60**	0.78**	0.71*	1

\*\*p&lt;.01, \*p&lt;.05

Note. 1 Drinking; 2 Drinking Behavior; 3 Peer Modeling; 4 Descriptive Norms-WSU Students; 5 Descriptive Norms-Friends; 6 Injunctive Norms-Parents; 7 Injunctive Norms-Friends; 8 Parental Monitoring; 9 Alcohol Expec-Risk/Aggression/Liquid Courage/Social; 10 Alcohol Expec-Self Perception/Social & Cognitive Impairments; 11 Alcohol Expec-Sexuality; 12 Alcohol Expec-Tension Red; 13 Drinking Motives-Social; 14 Drinking Motives-Coping; 15 Drinking Motives-Enhancement; 16 Drinking Motives-Conformity

**Research Question 1: What are the individual contributions of social variables (peer modeling, descriptive norms, injunctive norms, parental monitoring) in explaining variance in college drinking?**

A Multiple Linear Regression Analysis was conducted in order to answer this question. Predictor variables for this analysis included all four social factors: peer modeling, descriptive norms, injunctive norms and parental monitoring. The criterion variable used was college drinking, which was comprised of two subscales: quantity and frequency of drinks and drinking behaviors. In regard to quantity and frequency of drinking, results indicated that social factors contributed to 45.3% of the overall variance,  $R^2=45.3$ ,  $p<.01$ . Specifically, it was found that peer modeling, descriptive norms (best friends subscale) and injunctive norms (parents subscale) contributed significantly to the variance in quantity and frequency of drinking. In regard to drinking behaviors, results indicated that social factors contributed to 40.2% of the overall variance,  $R^2=40.2$ ,  $p<.01$ . It was found that descriptive norms (best friends scale) and injunctive norms (parents scale) contributed significantly to the variance in drinking behaviors. Refer to Tables 5 and 6 below.

Table 5

*Multiple Linear Regression-Predicting College Drinking using Social Factors*

Predictors	B	SEB	B
Peer Modeling	0.68**	0.17	0.28
Descriptive Norms			
WSU Students	-0.03	0.04	-0.03
Best Friends	0.20**	0.05	0.29
Injunctive Norms			
Friends	0.12	0.15	0.06
Parents	0.52**	0.15	0.21
Parental Monitoring	0.07	0.17	0.02

Note. \* $p < .05$ ; \*\* $p < .01$ ;  $p < .001$ \*\*  $F = 33.54$ ;  $R^2 = 45.3\%$

Table 6

*Multiple Linear Regression-Predicting College Drinking Behaviors using Social Factors*

Predictors	B	SEB	B
Peer Modeling	0.15	0.09	0.13
Descriptive Norms			
WSU Student	-0.01	0.02	-0.03
Best Friends	0.06**	0.03	0.20
Injunctive Norms			
Friends	0.11	0.08	0.12
Parents	0.24**	0.08	0.21
Parental Monitoring	-0.09	0.09	-0.05

Note. \* $p < .05$ ; \*\* $p < .01$ ;  $p < .001$ \*\*\*;  $F = 15.45$ ;  $R^2 = 40.2\%$

**Research Question 2: What are the individual contributions of cognitive variables (positive/negative outcome expectancies, drinking norms) in explaining college drinking?**

A Multiple Linear Regression Analysis was conducted in order to answer this question. Predictor variables for this analysis included positive and negative alcohol expectancies and drinking motives. The criterion variable used was college drinking, and as indicated previously is divided into two subscales: quantity and frequency of drinks and drinking behaviors. In regard to quantity and frequency of drinking, results indicated that cognitive factors contributed to 51.0% of the variance,  $R^2=51.0$ ,  $p<.01$ . Specifically, alcohol expectancies (sociability/aggression/liquid courage/risk taking subscale) and drinking motives (social subscale and enhancement subscale) contributed significantly to the variance in quantity and frequency of drinking. In regard to drinking behaviors, results indicated that cognitive factors contributed to 32% of the variance,  $R^2=32.0$ ,  $p<.01$ . Specifically, drinking motives (social subscale) significantly contributed to the variance in drinking behaviors. Refer to Tables 7 and 8 below.

Table 7

*Multiple Linear Regression-Predicting College Drinking using Cognitive Factors*

Predictors	B	SEB	B
Positive/Negative Alcohol Expectancies			
Scale #1	0.43**	0.20	0.19
Scale #2	-0.25	0.15	-0.11
Scale #3	0.05	0.11	0.03
Scale #4	0.10	0.13	0.05
Drinking Motives			
Social	0.70**	0.17	0.42
Coping	-0.10	0.20	0.42
Enhancement	0.47**	0.21	0.25
Conformity	-0.07	0.16	-0.03

Note. \* $p < .05$ ; \*\* $p < .01$ ;  $p < .001$ ;  $F = 31.43$ ;  $R^2 = 51.0\%$

Table 8

*Multiple Linear Regression-Predicting College Drinking Behavior using Cognitive Factors*

Predictors	B	SEB	B
Positive/Negative Alcohol Expectancies			
Scale #1	0.11	0.11	0.09
Scale #2	-0.02	0.08	-0.02
Scale #3	0.08	0.06	0.09
Scale #4	-0.04	0.07	-0.04
Drinking Motives			
Social	0.23**	0.09	0.28
Coping	-0.03	0.11	-0.03
Enhancement	0.22	0.12	0.24
Conformity	0.00	0.09	0.00

Note. \* $p < .05$ ; \*\* $p < .01$ ;  $p < .001$ \*\*\*  $F = 14.21$ ;  $R^2 = 32.0\%$

**Research Question 3: What are the combined contributions of peer, family, and cognitive factors in explaining variance in college drinking?**

A Hierarchical Linear Regression Analysis was used to answer this question. The criterion variable for this analysis was college drinking behavior, which is comprised of two subscales: quantity and frequency of drinks and drinking behaviors. On step 1 the predictor variables included cognitive variables positive and negative alcohol expectancies and drinking motives. On step 2 these same cognitive variables remained with the addition of social variables peer modeling, descriptive norms, injunctive norms, and parental monitoring. In regard to quantity and frequency of drinks, results indicated that cognitive variables explained 51% of the variance,  $R^2 = 51.0$ ,  $p < .01$ . Specifically, positive and negative alcohol expectancies (sociability/liquid courage/aggression/risk taking subscale) and drinking motives (social subscale and enhancement subscale) significantly contributed to the variance. Results indicated that the combination of both social and cognitive variables contributed 58% of the variance,  $R^2 = 58.0$ ,  $p < .01$ . In regard to drinking behaviors, results found that cognitive variables contributed to 32% of the variance,  $R^2 = 32.0$ ,  $p < .01$ , while a combination of social and cognitive factors contributed to 37% of the variance,  $R^2 = 37.0$ ,  $p < .01$ . Refer to Tables 9 and 10 below.

Table 9

*Hierarchical Multiple Linear Regression Analysis-Overall College Drinking with Social and Cognitive Factors (n=250).*

Predictor	B	SEB	$\beta$	<i>p</i>	R <sup>2</sup>
<b>Step 1</b>					32.0%
<u>Pos/NegAlcohExp.</u>					
R/A/Li/Soc	.11	.11	0.09	0.341	
SP/CB	-0.02	0.08	-0.02	0.828	
Sex	0.08	0.06	0.09	0.227	
TR	-0.04	0.07	-0.04	0.607	
<u>Drinking Motives</u>					
Social	0.23	0.09	0.28	0.017	
Coping	-0.03	0.11	-0.03	0.785	
Enhan.	0.22	0.12	0.24	0.066	
Conform	0.00	0.09	0.00	0.985	
<b>Step 2</b>					37.0%
<u>Pos/NegAlcohExp.</u>					
R/A/Li/Soc	0.09	0.11	0.08	0.434	
SP/CB	0.00	0.08	0.00	0.974	
Sex	0.09	0.06	0.10	0.184	
TR	-0.06	0.07	-0.06	0.396	
<u>Drinking Motives</u>					
Social	0.17	0.09	0.21	0.075	
Coping	-0.04	0.11	-0.04	0.740	
Enhan.	0.16	0.12	0.17	0.184	
Conform	-0.01	0.09	-0.01	0.915	
<u>Peer Modeling</u>	0.02	0.09	0.02	0.806	

Descriptive Norms

WSU Student	-0.02	0.02	-0.05	0.383
Best Friends	0.03	0.03	0.10	0.227

Injunctive Norms

Friends	0.07	0.08	0.07	0.384
Parents	0.16	0.08	0.13	0.048

<u>Parental Monitoring</u>	0.10	0.09	-0.06	0.248
----------------------------	------	------	-------	-------

---

Note.  $\Delta r^2=5\%$ ,  $F=3.07$ ,  $df=(6,234)$ ,  $p<0.05$



Table 10

*Hierarchical Multiple Linear Regression Analysis-Overall College Drinking Behavior with Social and Cognitive Factors (n=250).*

Predictor	B	SEB	$\beta$	<i>p</i>	R <sup>2</sup>
<b>Step 1</b>					51.0%
<u>Pos/NegAlcohExp.</u>					
R/A/Li/Soc	0.43	0.20	0.19	0.0287	
SP/CB	-0.25	0.15	-0.11	0.0896	
Sex	0.05	0.11	0.03	0.6382	
TR	0.10	0.13	0.05	0.4430	
<u>Drinking Motives</u>					
Social	0.70	0.17	0.42	<.0001	
Coping	-0.10	0.20	-0.05	0.6134	
Enhan.	0.47	0.21	0.25	0.0277	
Conform	-0.07	0.16	-0.03	0.6504	
<b>Step 2</b>					58.0%
<u>Pos/NegAlcohExp.</u>					
R/A/Li/Soc	0.41	0.19	0.17	0.035	
SP/CB	-0.23	0.14	- 0.10	0.102	
Sex	0.06	0.11	0.03	0.575	
TR	0.02	0.12	0.01	0.858	
<u>Drinking Motives</u>					
Social	0.49	0.16	0.30	0.002	
Coping	-0.12	0.19	-0.06	0.541	
Enhan.	0.31	0.20	0.16	0.132	
Conform	-0.08	0.15	-0.04	0.602	
<u>Peer Modeling</u>	0.35	0.16	0.14	0.026	

Descriptive Norms

WSU Student	-0.05	0.04	-0.06	0.210
Best Friends	0.14	0.04	0.20	0.003

Injunctive Norms

Friends	- 0.04	0.13	-0.02	0.764
Parents	0.32	0.13	0.13	0.017

<u>Parental Monitoring</u>	- 0.13	0.15	-0.01	0.832
----------------------------	--------	------	-------	-------

---

Note.  $\Delta r^2 = 8\%$ ,  $F=6.49$ ,  $df=(6,234)$ ,  $p<0.025$

**Research Question 4: Do social factors (i.e., family and peer) mediate the relations between cognitive factors and college drinking?**

To determine if social factors (peer modeling, descriptive norms, injunctive norms and parental monitoring) mediate the relations between cognitive factors (positive and negative alcohol expectancies and drinking motives) and college drinking, Barron & Kenny's (1984) mediation analysis procedures using Multiple Linear Regression Analysis was used. Since alcohol expectancies and drinking motives are each made up of 4 subscales, each subscale was tested for mediation by each mediating variable. Descriptive and injunctive norms have 2 subscales each. Mediation for these variables was assumed to occur in parallel and thus both subscales were tested together in one 4-step analysis. There were a total of eight separate analyses conducted for the current study. The total effect and direct effect of the cognitive factor is reported in the tables. The indirect effect of the cognitive factor through the mediating factor is also reported with Sobel's test p-value to determine the statistical significance of the mediation. If the indirect effect is equal to the total effect and Sobel's test p-value is smaller than 0.05, then full mediation is reported. If Sobel's test p-value is smaller than 0.05 and the

indirect effect is smaller than the total effect, then partial mediation is reported. If Sobel's test p-value is  $\geq 0.05$  then mediation does not exist between these factors.

The first analysis conducted was to determine if peer modeling mediated the relations between college drinking and alcohol expectancies. Mediation of alcohol expectancies (quantity/frequency of drinking subscale) was found for subscales sociability, sexuality, and tension reduction (see Table 11.1). The effect of alcohol expectancies as measured by sociability on quantity/frequency of drinking was 1.07 with 0.81 of that effect being directly due to sociability and 0.28 due to the mediation through peer modeling (Sobel's p-value = 0.008). Similarly, the effect of alcohol expectancies as measured by sexuality was 0.36 with 0.23 due to the sexuality subscale directly and 0.12 from the mediation with peer modeling (Sobel's p-value= 0.045). Alcohol expectancies effect on drinking behavior was found to be mediated for sociability through peer modeling (total effect=0.35, indirect effect=0.09; Sobel's test p-value=0.019). Peer modeling did not mediate the effect of alcohol expectancies on drinking behavior for any of the other subscales (self-perception, sexuality, or tension reduction).

The second analysis conducted was to determine if descriptive norms mediate the relations between college drinking and alcohol expectancies. Results indicated that descriptive norms partially mediates alcohol expectancies (sociability subscale) with statistical significance in the friends subscale (Sobel's test p-value=0.001) but not typical WSU students (Sobel's test p-value=0.25). The total indirect effect is 0.36 of the total effect of 1.09 with the entire portion of the indirect effect due to the friends subscale. All other subscales were not mediated by descriptive norms (self-perception, sexuality, and tension reduction). See Table 11.2 for the detailed results. Similar results are found with the drinking behavior outcome. The only

mediated subscale was sociability by friends subscale of descriptive norms (Sobel's test  $p$ -value=0.002) with the indirect effect being 0.12 of the total effect of 0.35.

The next analysis conducted was to examine whether injunctive norms mediate the relationship between college drinking and alcohol expectancies. Alcohol expectancies effect on drinking quantity and frequency subscale was found to be partially mediated by injunctive norms. The subscales partially mediated by injunctive norms are sociability and self-perception and these subscales are mediated by the injunctive norm friends' subscale and are not mediated by the parents subscale. Sociability is mediated by an indirect effect of 0.27 by friends norms compared to the sociability total effect of 1.09 (Sobel's test  $p$ -value=0.004). Self-perception was mediated by an indirect effect of -0.16 by friends norms compared to the total effect of -0.58 (Sobel's test  $p$ -value=0.01). Alcohol expectancies effect on drinking behavior is mediated by injunctive norms on the same subscales as was found on drinking quantity and frequency. (See Table 11.3)

Another analysis was conducted to determine if parental monitoring mediates the relations between college drinking and alcohol expectancies. Results determined that alcohol expectancies were not mediated by parental monitoring on any subscale. (See Table 11.4). All indirect effects on all subscales are nearly zero and Sobel's test  $p$ -values range from 0.22 to 0.59.

Analysis was conducted to determine if peer modeling mediates the relations between college drinking and drinking motives. Drinking motives is made up of four subscales; social, coping, enhancement, and conformity. The effect of drinking motives on drinking quantity and frequency as mediated by peer modeling is reported in Table 11.5. Out of the four subscales, social drinking motives is mediated by peer modeling with the indirect effect of 0.19 out of the total effect size of 0.92 (Sobel's test  $p$ -value=0.002). The other subscales were not found to be

mediated by peer modeling. Drinking motives effect on drinking behavior was not modified by peer modeling on any of subscales.

Analysis was conducted to examine whether descriptive norms mediates the relations between college drinking and drinking motives. Results determined that partial mediation by descriptive norms was found. The social subscale was partially mediated by the friends subscale for descriptive norms. The total effect of the social subscale was 0.92 and the indirect effect of friends on the social subscale was 0.18 (Sobel's test p-value=0.004). Descriptive norms were not found to mediate any other subscales effect on drinking quantity and frequency. Drinking behavior has the same results with the social subscale being mediated by an indirect effect of 0.05 by friends descriptive norms on the total effect size of 0.28 (Sobel's test p-value = 0.04). The other subscales were not mediated by the descriptive norms. (See Table 11.6)

Analysis was done to determine whether injunctive norms mediate the relations between college drinking and drinking motives. Results determined that injunctive norms were found to mediate drinking motives on the drinking quantity and frequency subscale but not on drinking behavior subscale. The social subscale was mediated by the friends injunctive norms with an indirect effect of 0.09 of the total effect of 0.92 (Sobel's test p-value=0.049) for drinking quantity and frequency. Injunctive norms did not mediate any other subscales on drinking quantity and frequency. (See Table 11.7)

The last analysis conducted was to determine whether parental monitoring mediates the relations between college drinking and drinking motives. Results indicated that parental monitoring was not found to mediate the effect of drinking motives on alcohol expectancies (quantity/frequency nor drinking behavior subscales) (See Table 11.8). Sobel's test p-values for each set of analyses range from 0.98 to 0.55.

Table 11.1

*Mediation Analysis**College Drinking and Alcohol Expectancies as Mediated by Peer Modeling*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
Quant/Freq	Peer Modeling	Alcohol Exp. Scale #1	1.07	0.81	0.28	0.008**
		Scale#2	-0.58	-0.43	-0.15	0.053
		Scale#3	0.36	0.23	0.12	0.045*
		Scale#4	0.14	-0.00	0.14	0.040*
Drinking Beh	Peer Modeling	Alcohol Exp. Scale#1	0.35	0.26	0.09	0.019*
		Scale#2	-0.14	-0.09	-0.05	0.071
		Scale#3	0.20	0.16	0.04	0.063
		Scale#4	-0.03	-0.08	-0.05	0.062

Note. \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ; p is from Sobel's test.

Alcohol Expectancies Scale #1=Sociability/Liquid Courage/Risk Taking/Aggression; Scale#2=Self-Perception/Social & Cognitive Impairments; Scale#3=Sexuality; Scale#4=Tension Reduction.

Table 11.2

*Mediation Analysis**College Drinking and Alcohol Expectancies as Mediated by Descriptive Norms*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
<b>Quant/Freq</b>						
	Descrip. Norms	Alcohol Exp.				
		Scale #1	1.09	0.73	0.36 (Tot) -0.07 (WSU) 0.43 (Friend)	0.250 0.001***
		Scale#2	-0.58	-0.45	-0.13 (Tot) 0.02 (WSU) -0.14 (Friend)	0.430 0.100
		Scale#3	0.36	0.25	0.11 (Tot) 0.0 (WSU) 0.11 (Friend)	0.880 0.120
		Scale#4	0.14	0.12	0.02 (Tot) 0.00 (WSU) 0.01 (Friend)	0.770 0.860
<b>Drinking Beh</b>						
	Descrip. Norms	Alcohol Exp.				
		Scale#1	0.35	0.24	0.012 (Tot) -0.04 (WSU) 0.15 (Friend)	0.300 0.002**
		Scale#2	-0.14	-0.09	-0.04 (Tot) 0.01 (WSU) -0.500 (Friend)	0.470 0.120
		Scale#3	0.20	0.16	0.04 (Tot) 0.00 (WSU) 0.04 (Friend)	0.890 0.130
		Scale#4	-0.03	-0.04	-0.01 (Tot) 0.00 (WSU) 0.01 (Friend)	0.770 0.860

Note. \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ; p is from Sobel's test.

Alcohol Expectancies Scale #1=Sociability/Liquid Courage/Risk Taking/Aggression; Scale#2=Self-Perception/Social & Cognitive Impairments; Scale#3=Sexuality; Scale#4=Tension Reduction.

Table 11.3

*Mediation Analysis**College Drinking and Alcohol Expectancies as Mediated by Injunctive Norms*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
<b>Quant/Freq</b>						
	Descrip. Norms	Alcohol Exp.				
		Scale #1	1.09	0.73	0.36 (Tot) 0.09 (Parents) 0.27 (Friends)	0.130 0.004**
		Scale#2	-0.58	-0.36	-0.22 (Tot) -0.06 (Parents) -0.16 (Friend)	0.150 0.010*
		Scale#3	0.36	0.31	0.05 (Tot) 0.03 (Parents) 0.02 (Friend)	0.370 0.590
		Scale#4	0.14	0.01	0.13 (Tot) 0.05 (Parents) 0.08 (Friend)	0.200 0.090
<b>Drinking Beh</b>						
	Descrip. Norms	Alcohol Exp.				
		Scale#1	0.35	0.20	0.16 (Tot) 0.04 (Parents) 0.11 (Friend)	0.130 0.001***
		Scale#2	-0.14	-0.04	-0.10 (Tot) -0.03 (Parents) -0.07 (Friend)	0.150 0.020*
		Scale#3	0.20	0.18	0.02 (Tot) 0.01 (WSU) 0.01 (Friend)	0.370 0.600
		Scale#4	-0.03	-0.09	0.06 (Tot) 0.02 (Parents) 0.03 (Friend)	0.200 0.110

Note. \*\*\*p<.001; \*\*p<.01; \*p<.05; p is from Sobel's test.

Alcohol Expectancies Scale #1=Sociability/Liquid Courage/Risk Taking/Aggression; Scale#2=Self-Perception/Social & Cognitive Impairments; Scale#3=Sexuality; Scale#4=Tension Reduction.



Table 11.4

*Mediation Analysis**College Drinking and Alcohol Expectancies as Mediated by Parental Monitoring*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
<b>Quant/Freq</b>						
	Parental Mon.	Alcohol Exp.				
		Scale #1	1.09	1.07	0.01	0.590
		Scale#2	-0.58	-0.59	0.01	0.580
		Scale#3	0.36	0.34	0.02	0.340
		Scale#4	0.14	0.16	-0.02	0.330
<b>Drinking Beh</b>						
	Parental Mon.	Alcohol Exp.				
		Scale#1	0.35	0.34	0.01	0.540
		Scale#2	-0.14	-0.15	0.01	0.520
		Scale#3	0.20	0.19	0.02	0.230
		Scale#4	-0.03	-0.01	-0.02	0.220

Note. \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ; p is from Sobel's test.

Alcohol Expectancies Scale #1=Sociability/Liquid Courage/Risk Taking/Aggression; Scale#2=Self-Perception/Social & Cognitive Impairments; Scale#3=Sexuality; Scale#4=Tension Reduction.

Table 11.5

*Mediation Analysis**College Drinking and Drinking Motives as Mediated by Peer Modeling*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
Quant/Freq	Peer Modeling.	Drinking Motives				
		Scale #1	0.92	0.73	0.19	0.002**
		Scale#2	-0.08	-0.06	-0.01	0.830
		Scale#3	0.45	0.35	0.10	0.150
		Scale#4	-0.14	-0.12	-0.02	0.700
Drinking Beh	Peer Modeling.	Drinking Motives				
		Scale#1	0.28	0.24	0.04	0.110
		Scale#2	-0.03	-0.02	-0.00	0.850
		Scale#3	0.23	0.21	0.02	0.280
		Scale#4	0.00	0.00	0.00	0.740

Note. \*\*\*p<.001; \*\*p<.01; \*p<.05; p is from Sobel's test.

Drinking Motives Scale #1=Social; Scale#2=Coping; Scale#3=Enhancement; Scale#4=Conformity.

Table 11.6

*Mediation Analysis**College Drinking and Drinking Motives as Mediated by Descriptive Norms*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
<b>Quant/Freq</b>						
	Descriptive Norms	Drinking Motives				
		Scale #1	0.92	0.75	0.17 (Tot) -0.01 (WSU) 0.18 (Friend)	0.780 0.004**
		Scale#2	-0.08	-0.12	0.05 (Tot) -0.01 (WSU) 0.05 (Friends)	0.790 0.450
		Scale#3	0.45	0.36	0.09 (Tot) 0.00 (WSU) 0.09 (Friends)	0.950 0.210
		Scale#4	-0.14	-0.13	-0.01 (Tot) 0.0 (WSU) -0.01 (Friends)	0.850 0.800
<b>Drinking Beh</b>						
	Descriptive Norms	Drinking Motives				
		Scale#1	0.28	0.23	0.05 (Tot) -0.00 (WSU) 0.05 (Friends)	0.660 0.040*
		Scale#2	-0.03	-0.04	0.01 (Tot) -0.01 (WSU) 0.02 (Friends)	0.670 0.490
		Scale#3	0.23	0.20	0.03 (Tot) 0.00 (WSU) 0.00 (Friends)	0.780 0.810
		Scale#4	0.00		0.00 (Tot) 0.00 (WSU) 0.00 (Friends)	0.780 0.810

Note. \*\*\*p<.001; \*\*p<.01; \*p<.05; p is from Sobel's test.

Drinking Motives Scale #1=Social; Scale#2=Coping; Scale#3=Enhancement; Scale#4=Conformity.

Table 11.7

*Mediation Analysis**College Drinking and Drinking Motives as Mediated by Injunctive Norms*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
<b>Quant/Freq</b>						
	Injunctive Norms	Drinking Motives				
		Scale #1	0.92	0.79	0.13 (Tot) 0.04 (Parents) 0.09 (Friend)	0.190 0.049*
		Scale#2	-0.08	-0.08	0.00 (Tot) 0.01 (Parents) -0.01 (Friends)	0.790 0.450
		Scale#3	0.45	0.36	0.12 (Tot) 0.04 (Parents) 0.09 (Friends)	0.300 0.110
		Scale#4	-0.14	-0.14	-0.00 (Tot) 0.00 (Parents) -0.01 (Friends)	0.970 0.950
<b>Drinking Beh</b>						
	Injunctive Norms	Drinking Motives				
		Scale#1	0.28	0.22	0.06 (Tot) 0.03 (Parents) 0.03 (Friends)	0.170 0.120
		Scale#2	-0.03	-0.03	0.00 (Tot) 0.00 (Parents) 0.00 (Friends)	0.780 0.840
		Scale#3	0.23	0.17	0.06 (Tot) 0.02 (Parents) 0.03 (Friends)	0.290 0.190
		Scale#4	0.00		0.00 (Tot) 0.00 (Parents) 0.00 (Friends)	0.970 0.960

Note. \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ; p is from Sobel's test.

Drinking Motives Scale #1=Social; Scale#2=Coping; Scale#3=Enhancement; Scale#4=Conformity.

Table 11.8

*Mediation Analysis**College Drinking and Drinking Motives as Mediated by Parental Monitoring*

Criterion	Mediator	Predictor	Total Effect	Direct Effect	Indirect Effect	p
Quant/Freq	Parental Mon.	Drinking Motives				
		Scale #1	0.92	0.92	0.00	0.880
		Scale#2	-0.08	-0.09	0.01	0.640
		Scale#3	0.45	0.435	0.00	0.980
		Scale#4	-0.14	-0.15	-0.01	0.600
Drinking Beh	Parental Mon.	Drinking Motives				
		Scale#1	0.28	0.28	0.00	0.870
		Scale#2	-0.03	-0.04	0.01	0.590
		Scale#3	0.23	0.23	0.00	0.980
		Scale#4	0.00	-0.01	0.01	0.550

Note. \*\*\*p<.001; \*\*p<.01; \*p<.05; p is from Sobel's test.

Drinking Motives Scale #1=Social; Scale#2=Coping; Scale#3=Enhancement; Scale#4=Conformity.

### **Research Question 5: Do these patterns vary for each gender?**

For each variable of interest the frequency, mean, standard deviation, median, minimum, and maximum were calculated and reported by gender. Comparisons of the male and female distributions of each variable were made using a Wilcoxon rank test and the p-values are reported. The rank test was used because the majority of the variables were not normally distributed and were right skewed which violate the assumptions necessary to use a t-test for

these comparisons (See Table 12). Results indicated that there were no significant differences between gender among any of the variables.

Table 12

*Gender Distributions Among Variables*

<b>Variable</b>	<b>Gender</b>	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>	<b>p-value</b>
<b>Alcohol Exp: Sociability/LC/RA</b>	<b>Male</b>	108	2.64	0.88	2.86	1	4	0.3098
	<b>Female</b>	142	2.76	0.86	3	1	5	
<b>Alcohol Exp: Self Perception/Cog/Beh Impair</b>	<b>Male</b>	108	2.38	0.87	2.5	1	4	0.1754
	<b>Female</b>	142	2.54	0.87	2.5	1	5	
<b>Alcohol Exp: Sexuality</b>	<b>Male</b>	108	2.15	1	2	1	4	0.2812
	<b>Female</b>	142	2.3	1.08	2.5	1	5	
<b>Alcohol Exp: Tension Reduction</b>	<b>Male</b>	108	2.38	0.97	2.5	1	4	0.4945
	<b>Female</b>	142	2.46	1	2.5	1	5	
<b>Drinking Motives: Conformity</b>	<b>Male</b>	108	1.7	0.92	1.2	1	4.8	0.6034
	<b>Female</b>	142	1.6	0.77	1.2	1	4	
<b>Drinking Motives: Coping</b>	<b>Male</b>	108	1.95	1.04	1.6	1	5	0.8019
	<b>Female</b>	142	1.84	0.85	1.8	1	4.4	
<b>Drinking Motives: Enhancement</b>	<b>Male</b>	108	2.14	1.1	2	1	5	0.875
	<b>Female</b>	142	2.14	1.01	2	1	4.6	
<b>Drinking Motives: Social</b>	<b>Male</b>	108	2.56	1.32	2.4	1	5	0.5593
	<b>Female</b>	142	2.66	1.3	2.7	1	5	
<b>Drinking Norms: Best Friends</b>	<b>Male</b>	108	8.85	9.12	6.5	0.5	39	0.325
	<b>Female</b>	142	6.9	6.51	5.5	0.5	38	
<b>Drinking Norms: WSU Student</b>	<b>Male</b>	108	12.5	9.83	10	0.5	55	0.9549
	<b>Female</b>	142	11.84	7.78	11	0.5	46	
<b>Drinking Norms: Self</b>	<b>Male</b>	108	5.36	6.83	2.5	0.5	39	0.1213
	<b>Female</b>	142	3.53	4.4	2	0.5	22	
<b>Peer Modeling</b>	<b>Male</b>	108	2.37	0.84	2.5	1	4	0.3936
	<b>Female</b>	142	2.49	0.8	2.5	1	4	
<b>Parental Monitoring</b>	<b>Male</b>	108	3.35	0.94	3.33	1.44	5	0.3842
	<b>Female</b>	142	3.69	0.79	3.67	1.56	5	
<b>Injunctive Norms: Friends</b>	<b>Male</b>	108	2.29	1.21	2.13	1	5.75	0.4886
	<b>Female</b>	142	2.11	0.95	2	1	5.75	
<b>Injunctive Norms: Parents</b>	<b>Male</b>	108	1.44	0.72	1	1	4	0.4712
	<b>Female</b>	142	1.48	0.71	1	1	5.75	

## **Chapter 5**

### **Discussion**

The population selected for this study, college students aged 18-25, are an important demographic to research due to the fact that they fall into a distinct developmental stage known as emerging adulthood. During this stage individuals are faced with a unique set of social, educational and familial challenges. In addition, the adoption of certain risk taking behaviors, such as alcohol consumption, is also common during this time frame as individuals experience more freedom from parental constraints. As mentioned in previous chapters, studies conducted by the National Institute of Health confirm that alcohol consumption on college campuses is a matter of national concern, with an increase in incidences of alcohol related injuries, accidents, and deaths being reported. While a number of studies have researched the different factors that contribute to increased alcohol consumption on college campuses, few studies have examined the role of both social and cognitive variables, separately and combined, within an ecological framework, and whether these variables differ by gender.

Overall, the current study supported most of the previously stated hypotheses. In regard to hypotheses 1-3, it was found that both social and cognitive variables, when examined separately and together, contributed to a portion of the variance in college drinking. In regard to hypothesis 4, it was found that certain social variables do in fact mediate the relationship between cognitive variables and college drinking, in part, while others were not found to be significant (no mediation). Lastly, hypothesis 5 was disproven, with no significant differences between gender among any of the variables. Each hypothesis is discussed in more detail next.



**Research Question 1: What are the individual contributions of social variables (peer modeling, descriptive norms, injunctive norms, parental monitoring) in explaining variance in college drinking?**

It was expected that social factors would explain a significant proportion of variance in college drinking. Specifically it was expected that participants that endorsed higher levels of peer modeling, perceptions of increased peer alcohol consumption (descriptive norms), acceptability of their drinking behaviors by peers and/or parents (injunctive norms) and decreased parental monitoring would report increased drinking. Results from this analysis indicated that a significant proportion of the variance can be explained by social factors. When examining quantity and frequency of alcohol consumption, it was found that peer modeling, students' perceptions of their best friends' alcohol consumption (descriptive norms), and students' perceptions of their parents approval of alcohol consumption (injunctive norms) were significant. When examining drinking behaviors, it was found that students' perceptions of their best friends' alcohol consumption (descriptive norms), and students' perceptions of their parents approval of alcohol consumption (injunctive norms) were significant.

In regard to quantity and frequency of alcohol consumption, students who reported that their peer group drank either "on a regular basis" or "from time-to-time" were more likely to report an increase in drinking. This correlates with the previous research discussed in chapter 2, which has found that peers serve as the most salient models due to the fact that they are the most proximal sources. College students, especially those that live on-campus, spend the majority of their time with peers in classrooms, dorms and socializing on campus. It seems likely that if those that one spends the most time with are engaging in alcohol consumption, one would be more inclined to engage in these behaviors as well.

When examining both quantity and frequency of alcohol consumption and drinking behaviors, it was found that students that reported that their best friends' drink during the week and/or weekends were more likely to report alcohol consumption and alcohol related problem behaviors, and those that reported that that their parents would most likely approve of them engaging in drinking were more likely to engage in alcohol consumption and endorse alcohol related problem behaviors. In other words, if a student perceives that their closest friends are drinking alcohol during the week and/or weekends they are more likely to engage in alcohol consumption as well. As mentioned previously, peers serve as salient models, and an individual who spends the majority of time with close friends is more likely to adopt behaviors displayed by these friends. Also, if an individual perceives their friends' alcohol use to be significant (whether accurate or not) it seems plausible that they will use this to justify their own alcohol consumption.

**Research Question 2: What are the individual contributions of cognitive variables (positive/negative outcome expectancies, drinking norms) in explaining college drinking?**

It was expected that cognitive variables would explain a significant amount of variance in college drinking. More specifically, it was suggested that individuals who endorse high positive alcohol expectancies (i.e., sociability, sexuality and tension reduction subscales) and low negative alcohol expectancies (cognitive and behavioral impairments) would demonstrate an increase in alcohol consumption. It was also suggested that students who endorsed drinking motives (social, coping, enhancement and conformity subscales) would report increased alcohol consumption in both amount/frequency and problem behaviors.

Results found significant positive relations between positive alcohol expectancies and frequency/amount of alcohol consumption, however, this was found only for the social subscale.

In other words, individuals who reported that they consumed alcohol because it enhanced their social functioning or made them more courageous were more likely to report a greater amount/frequency of alcohol consumption. There were no significant findings, however, that suggested that individuals who endorsed low negative alcohol expectancies reported increased alcohol consumption. Results also indicated a significant relation between drinking motives (social and enhancement) and quantity/frequency of alcohol consumption. This suggests that students that report that they are more likely to consume alcohol because it helps them to be more social during parties/activities and/or helps to improve their performance consume more alcohol. This also reveals that sociability/social factors represent an important underlying theme in college student alcohol consumption. It is possible that students associate drinking behaviors with social activities, as most parties and social gatherings off college campuses usually involve some form of alcohol.

**Research Question 3: What are the combined contributions of peer, family, and cognitive factors in explaining variance in college drinking?**

It was predicted that the combined contributions of social and cognitive variables would explain more of the variance in college drinking than either social or cognitive variables alone. Social factors included peer modeling, descriptive norms, injunctive norms, and parental monitoring. Cognitive factors included positive and negative alcohol expectancies and drinking motives. In terms of conceptualizing these factors in an ecological framework, the cognitive factors, which are intrapersonal, represent the self microsystem, while the social factors, which are interpersonal, represent the peer and family microsystems.

When examining both frequency/quantity of alcohol consumption and drinking related problem behaviors, results suggest that the combined contributions do in fact explain a

significantly greater percentage of the variance than either factors alone. Results determined that specific subscales (alcohol expectancies sociability subscale and drinking motives social and enhancement subscales) that were found to be significant when examining cognitive factors alone were no longer significant with the addition of social factors. This suggests a certain amount of shared variance among these variables. Specifically, the alcohol expectancies sociability subscale, while moderately significant when considered individually, was not found to be significant when combined with social factors. Similarly, the drinking motives enhancement subscale, while considered moderately significant alone, was not found to be significant when combined with social factors. Also, the drinking motives social subscale, while strongly significant when examining cognitive factors independently, was not considered significant when combined with social factors. As mentioned previously, the addition of such social variables as peer modeling and descriptive and injunctive norms likely results in an overlap of variance between social and cognitive variables.

Also, it is important to note that while the change in  $R^2$  was only 8%, when examining this amount of change in the context of developmental psychology research it is considered to be a relatively large amount.

**Research Question 4: Do social factors (i.e., family and peer) mediate the relations between cognitive factors and college drinking?**

It was predicted that social factors (peer modeling, descriptive norms, injunctive norms, parental monitoring) would mediate the relations between cognitive factors (alcohol expectancies and drinking motives) and college drinking. In other words, it was predicted that specific social factors would help to clarify and/or identify the underlying process of how cognitive factors may

influence college drinking. Results indicated significant mediation in 6 out of the 8 analyses conducted.

In the first analysis, which examined peer modeling as a mediator, partial mediation was detected between alcohol expectancies (sociability, tension reduction, and sexuality subscales) and college drinking. Partial mediation indicates that social factors account for some, but not all, of the relationship between alcohol expectancies and college drinking. This suggests that peer modeling serves as important factor in clarifying the relations between college drinking and alcohol expectancies. In other words, students that report that their peer groups engage in drinking behaviors (which serves as a platform for social modeling) are more likely to endorse positive alcohol expectancies, which in turn can lead to an increase in drinking. This seems logical, as the more a student surrounds themselves with friends that consume alcohol in social settings, the more likely they would be to develop the expectation that alcohol serves as a social lubricant and engage in alcohol consumption.

The next analysis examined descriptive norms (college students' perceptions of peer drinking) as a mediator between the relations of college drinking and alcohol expectancies. Descriptive norms were comprised of two subscales; students' perceptions of other WSU students drinking and students' perceptions of their best friend's drinking. Results indicated partial mediation between alcohol expectancies (sociability subscale) and drinking behavior, but only when examining students' best friend's drinking. This suggests that students who report their best friend's drink alcohol during the week and/or weekend were more likely to report positive alcohol expectancies. Students are more apt to be influenced by close friends with whom they have more intimate relationships and spend more time, and if these friends are engaging in alcohol consumption during social gatherings, it would make sense that an

individual would adopt the expectation that alcohol increases one's ability to socialize and have a good time.

The third analysis examined injunctive norms (college students' perceived acceptability of drinking behaviors by their peer group and/or parents) as a mediator between college drinking and alcohol expectancies. Results indicated that partial mediation occurred between college drinking and alcohol expectancies (sociability and cognitive/behavior impairments subscales), but only when examining students' best friend's drinking. Results also indicated a positive relation between alcohol expectancies and college drinking for the social subscale, and a negative relation between alcohol expectancies (cognitive/behavioral impairment subscale) and college drinking. This suggests that students that perceive approval of their drinking by peers and parents were more likely to display positive alcohol expectancies such as sociability and less likely to endorse negative alcohol expectancies. It seems reasonable that if an individual perceives that their parents would support and even approve of their decision to drink they are more likely to expect that alcohol would increase their chances of having fun at a social event (positive alcohol expectancies), and be less likely to feel that alcohol may cause them to feel sick or hinder their judgment (negative alcohol expectancies).

The fourth analysis examined parental monitoring (in high school) as a mediator between college drinking and alcohol expectancies. Contrary to what was expected, results indicated that no mediation occurred in this analysis. One reason this may have occurred is because students were reporting on parental monitoring retrospectively, and may not have reported accurately. It is also possible that there is too much of a time delay to demonstrate a significant association. It may also be likely that parental monitoring in high school, such as parents knowing their child's whereabouts and who they spent their time with, may not impact how one perceives alcohol once

they are in college. College students are met with increased freedom and the ability to make their own decisions without as much parental interference as when they were in high school. Exposure to new peer groups and different social situations can change how one thinks. An individual who may have originally believed that drinking alcohol would result in losing control or other negative consequences may, over time, begin to believe that alcohol would increase the ease with which they communicated with others, or make parties more enjoyable.

The fifth analysis examined peer modeling as a mediator between college drinking and drinking motives. Results determined a partial mediation between college drinking and drinking motives (social subscale). This suggests that when an individual is exposed to other peers that engage in drinking behaviors they are more likely to endorse social drinking motives (i.e., drinking to celebrate or enhance one's social confidence). As most drinking on college campuses occurs during parties, it makes sense that individuals' that are surrounded by peers that are engaged in drinking behaviors would be motivated by social factors.

The sixth analysis determined whether descriptive norms mediated the relations between college drinking and drinking motives. Results determined that partial mediation was found between college drinking and drinking motives (social subscale), but only for the descriptive norms best friends subscale. This suggests that students that report that their best friend's drink alcohol during the week and/or weekend were more likely to endorse social drinking motives. It would then stand to reason that college students that perceive their best friends' alcohol consumption to be mild or greater would be more likely to be motivated by social factors, such as having fun with peers at a party or making new friends.

The seventh analysis examined injunctive norms as a mediator between college drinking and drinking motives. Results indicated that partial mediation did occurred between college

drinking and drinking motives (social subscale), but only for the descriptive norms friends subscale. As mentioned previously, if an individual perceives that their friends approve of them engaging in drinking behavior, it seems likely that they too would engage in drinking behaviors for social reasons.

The eighth and final analysis examined parental monitoring (in high school) as a mediator between college drinking and drinking motives. Results indicated that no mediation occurred. As mentioned previously, due to the fact that parental monitoring was measured retrospectively results may not have been reported accurately. Also, due to increased independence and decreased supervision it is possible that one's motivation to engage in alcohol consumption for social reasons may develop over time with exposure to social modeling.

Overall, it appears that most social factors did mediate the relations between cognitive factors and college drinking, particularly when social subscales were present. Specifically, results indicate that for both alcohol expectancies and drinking motives the social subscales appear to play a significant role in college drinking. Also, when considering descriptive norms it appears that considering students' best friend's alcohol consumption is more important than the alcohol consumption of a typical WSU college student. Similarly, when considering injunctive norms it was found that student's friends' perceived approval of drinking was more significant than parents' perceived approval. Parental monitoring did not appear to mediate the relation between cognitive factors and college drinking.

**Research Question 5: Do these patterns vary for each gender?**

It was predicted that there would be gender differences among both social and cognitive variables. Contrary to what was expected, results indicated that no significant gender differences were found among variables. This was a surprising find, considering that previous research has



found that males consume more alcohol, and subsequently experience more alcohol related behavior problems, than do females (e.g., Geisner et al., 2004; Weschler et al, 1979). One explanation may be that college students tend to spend more time co-mingling with both same-sex and opposite-sex peers, whether it be on-campus during lectures or off-campus during their free-time. This would allow for an individual to have a more diverse reference group for modeling certain behaviors, such as alcohol consumption.

### **Limitations and Directions for Future Research**

There are several limitations to this study that should be recognized. First, all measurements utilized in this study were self-report questionnaires which have the potential to create bias in responses. Future research could focus on different methods of data collection, along with incorporating parents' and friends' perceptions of college student drinking behaviors in order to obtain a more comprehensive set of information utilizing multiple informants.

Second, all participants in the current study were enrolled at a large, urban commuter university in the Midwest. This makes it difficult to generalize the results from this study to other universities that may be different in size (large vs. small), geographical location (urban vs. rural), or student living (commuter vs. residing on campus). Future research could attempt to sample students from different universities in order to get a more comprehensive understanding of drinking behaviors across different college campuses.

Third, when examining gender differences in the current sample it is important to note that a rank test was used because the majority of the variables were not normally distributed and were right skewed, which violate the assumptions necessary to use a t-test for these comparisons. Therefore, these results should be interpreted with caution.

Fourth, a large number of participants in the current study reported either no alcohol consumption or significant alcohol consumption, with very few participants falling in between these two extremes, making it difficult to generalize the results. Future research could attempt to obtain a sample of students that are more diverse in their drinking behaviors.

## **Conclusions**

Results from this study underscore the importance of social and cognitive factors when examining college drinking. When examining social factors it is evident that peer modeling, descriptive norms (best friends subscale) and injunctive norms (parents subscale) are significant factors in college student drinking (quantity/frequency and problem behavior subscales). Upon examining cognitive factors it appears that positive alcohol expectancies (social subscale) and drinking motives (social and enhancement subscales) also play an important role in college student drinking. It was determined that gender differences among social and cognitive variables did not exist.

As alcohol related injuries and deaths in college students are steadily increasing, it is important for administrators at the university level to understand the various factors that potentially contribute or strengthen drinking behaviors among college students. In bringing awareness to these underlying factors, universities will be more successful in implementing prevention and/or intervention programs that target alcohol use by students. By understanding the specific social and cognitive factors that impact one's decision to drink, universities will be better prepared to handle the current wide spread rise in college drinking.

Results from this study may also prove beneficial to high school administrators, as risk taking behaviors such as alcohol consumption often begin prior to college. Developing

prevention programs based on specific social and cognitive factors that have been identified as significant in college drinking may also be beneficial for youth identified as being at risk.

## APPENDIX A

## HIC Approval

**WAYNE STATE  
UNIVERSITY**

IRB Administration Office  
87 East Canfield, Second Floor  
Detroit, Michigan 48201  
Phone: (313) 577-1628  
FAX: (313) 993-7122  
<http://irb.wayne.edu>

---

**CONCURRENCE OF EXEMPTION**

**To:** Leah Terian  
College of Education

**From:** Dr. Scott Millis *Scott Millis, PhD*  
Chairperson, Behavioral Institutional Review Board (B3)

**Date:** November 09, 2012

**RE:** IRB #: 106612B3X  
Protocol Title: Social and Cognitive Perceptions about Alcohol Use  
Sponsor:  
Protocol #: 1210011401

The above-referenced protocol has been reviewed and found to qualify for Exemption according to paragraph #2 of the Department of Health and Human Services Code of Federal Regulations [45 CFR 46.101(b)].

- Revised Protocol Summary Form (received in the IRB Office 11/9/12)
- Protocol (received in the IRB Office 10/12/12)
- The request for a waiver of the requirement for written documentation of informed consent has been granted according to 45 CFR 46.117(1)(2). Justification for this request has been provided by the PI in the Protocol Summary Form. The waiver satisfies the following criteria: (i) The only record linking the participant and the research would be the consent document, (ii) the principal risk would be potential harm resulting from a breach of confidentiality, (iii) each participant will be asked whether he or she wants documentation linking the participant with the research, and the participant's wishes will govern, (iv) the consent process is appropriate, (v) when used requested by the participants consent documentation will be appropriate, (vi) the research is not subject to FDA regulations, and (vii) an information sheet disclosing the required and appropriate additional elements of consent disclosure will be provided to participants not requesting documentation of consent.
- Research Information Sheet (dated 11/9/12)
- Data collection tools: Perceived Norms Questionnaire, Peer Alcohol Related Behaviors, Student Alcohol Questionnaire (SAQ), Parental Monitoring Questionnaire, Brief Drinking Norms Rating Form (DNRF), and Drinking Motives Measure (Revised)

This proposal has not been evaluated for scientific merit, except to weigh the risk to the human subjects in relation to the potential benefits.

- 
- Exempt protocols do not require annual review by the IRB.
  - All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.
  - Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (<http://irb.wayne.edu/policies-human-research.php>).



IRB Administration Office  
 87 East Canfield, Second Floor  
 Detroit, Michigan 48201  
 Phone: (313) 577-1628  
 FAX: (313) 993-7122  
<http://irb.wayne.edu>

---

### NOTICE OF EXPEDITED AMENDMENT APPROVAL

**To:** Leah Terian  
 College of Education

**From:** Dr. Scott Millis *S. Millis*  
 Chairperson, Behavioral Institutional Review Board (B5)

**Date:** December 07, 2012

**RE:** IRB #: 106612B3X  
 Protocol Title: Social and Cognitive Perceptions about Alcohol Use  
 Funding Source:  
 Protocol #: 1210011401

**Expiration Date:**

---

The above-referenced protocol amendment, as itemized below, was reviewed by the Chairperson/designee of the Wayne State University Institutional Review Board (B3) and is APPROVED effective immediately.

- Protocol – Addition of WSU Student Center as a study site (receipt of letter of support dated 11/21/12).
- Information Sheet (dated 12/3/12) – Addition of Information Sheet for WSU Student Center participants as compensation differs from classroom participants. An information sheet is being used in lieu of written consent as the only link between the participants and this study would be a signed consent.

## APPENDIX B

### Information Sheets

Social and Cognitive Perceptions about Alcohol Use

#### Research Information Sheet

Title of Study: *Social and Cognitive Perceptions about Alcohol Use*

Principal Investigator (PI): Leah Terian  
Department of Education  
248 338-5833

#### Purpose:

You are being asked to be in a research study of college student drinking behaviors because you are currently a student at Wayne State. This study is being conducted at Wayne State University.

#### Study Procedures:

If you take part in the study, you will be asked to fill out several questionnaires. These questionnaires will ask various questions regarding your alcohol use, your thoughts about drinking alcohol, and peer alcohol use. It will take approximately 20 minutes to fill out all of the questionnaires, and once you are finished you will hand them back to the Principal Investigator.

#### Benefits

As a participant in this research study, there may be no direct benefit for you; however, information from this study may benefit other people now or in the future.

#### Risks

There are no known risks at this time to participation in this study.

#### Costs

There will be no costs to you for participation in this research study.

#### Compensation

You will not be paid for taking part in this study. Participants will be given a raffle ticket that will be entered into a random drawing to win a gift card up to \$25. The drawing will take place after all participants in the class have completed and handed in their questionnaires.

#### Confidentiality:

All information collected about you during the course of this study will be kept without any identifiers.

#### Voluntary Participation /Withdrawal:

Taking part in this study is voluntary

#### Questions:

If you have any questions about this study now or in the future, you may contact Leah Terian at the following phone number 248 338-5833. If you have questions or concerns about your rights as a research participant, the Chair of the Human Investigation Committee can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call (313) 577-1628 to ask questions or voice concerns or complaints.

#### Participation:

By completing the questionnaires you are agreeing to participate in this study.

Submission/Revision Date: 11/9/12

Page 1 of 1

Protocol Version #: 1

**APPROVED**

NOV 09 2012

IRB Date **WAYNE STATE UNIVERSITY**  
**INSTITUTIONAL REVIEW BOARD**

Social and Cognitive Perceptions about Alcohol Use

**Research Information Sheet**

Title of Study: *Social and Cognitive Perceptions about Alcohol Use*

Principal Investigator (PI): Leah Terian  
Department of Education  
248 338-5833

**Purpose:**

You are being asked to be in a research study of college student drinking behaviors because you are currently a student at Wayne State. This study is being conducted at Wayne State University.

**Study Procedures:**

If you take part in the study, you will be asked to fill out several questionnaires. These questionnaires will ask various questions regarding your alcohol use, your thoughts about drinking alcohol, and peer alcohol use. It will take approximately 20 minutes to fill out all of the questionnaires, and once you are finished you will hand them back to the Principal Investigator.

**Benefits**

As a participant in this research study, there may be no direct benefit for you; however, information from this study may benefit other people now or in the future.

**Risks**

There are no known risks at this time to participation in this study.

**Costs**

There will be no costs to you for participation in this research study.

**Compensation**

For taking part in this research study, you will receive a five dollar gift card upon completing questionnaires. You may chose a gift card from the following options: Subway, Barnes & Noble, or Starbucks.

**Confidentiality:**

All information collected about you during the course of this study will be kept without any identifiers.

**Voluntary Participation /Withdrawal:**

Taking part in this study is voluntary

**Questions:**

If you have any questions about this study now or in the future, you may contact Leah Terian at the following phone number 248 338-5833. If you have questions or concerns about your rights as a research participant, the Chair of the Human Investigation Committee can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call (313) 577-1628 to ask questions or voice concerns or complaints.

**Participation:**

By completing the questionnaires you are agreeing to participate in this study.

Submission/Revision Date: 12/3/12

Page 1 of 1

Protocol Version #: 2

**APPROVED**

DEC 07 2012

IRB # 12-0013  
WAYNE STATE UNIVERSITY  
INSTITUTIONAL REVIEW BOARD

**APPENDIX C****Instruments****STUDENT ALCOHOL QUESTIONNAIRE (SAQ)**

**INSTRUCTIONS:** Circle the number which applies to you for each question.

**1. Gender:**

1. Male
2. Female

**2. Age** (write in) \_\_\_\_\_

**3. Major:**

1. Social Science
2. Arts and Humanities
3. Psychology
4. Engineering
5. Other (write in) \_\_\_\_\_

**4. Year in School**

1. Freshman
2. Sophomore
3. Junior
4. Senior
5. Graduate
6. Other

**5. GPA**

1. 4.0
2. 3.5
3. 3.0
4. 2.5
5. 2.0
6. Under 2.0

**6. Ethnicity**

1. African American
2. Caucasian
3. Asian/Pacific Islander
4. Hispanic
5. Middle Eastern
6. Hindu
7. Other (write in) \_\_\_\_\_

**7. Religion**



1. Catholic
2. Jewish
3. Orthodox
4. Muslim
5. Protestant
6. Baptist
7. Other (write in)\_\_\_\_\_

**8. How important is your religion to you?**

1. Very Important
2. Moderately Important
3. Mildly Important
4. Not Important

---

**We would like to ask you about your drinking patterns. Please circle the number which applies to you for each question.**

8. Let's take **beer** first. How often, on average, do you usually have a beer?
  1. Every day
  2. At least once a week but not every day
  3. At least once a month but less than once a week
  4. More than once a year but less than once a month
  5. Once a year or less
  
9. When you drink **beer**, how much, on average, do you usually drink at any one time?
  1. More than one 6-pack (6 or more cans or tavern glasses)
  2. 5 or 6 cans of beer or tavern glasses
  3. 3 or 4 cans of beer or tavern glasses
  4. 1 or 2 cans of beer or tavern glasses
  5. Less than 1 can of beer or tavern glass/none
  
10. Now let's look at **wine**. How often do you usually have wine?
  1. Every day
  2. At least once a week but not every day
  3. At least once a month but less than once a week
  4. More than once a year but less than once a month
  5. Once a year or less
  
11. When you drink **wine**, how much, on the average, do you usually drink at any one time?
  1. Over 6 glasses
  2. 5 or 6 glasses

3. 3 or 4 glasses
4. 1 or 2 glasses
5. Less than 1 glass/none

12. Next we would like to ask you about **liquor** (whiskey, gin, vodka, mixed drinks, etc.). How often do you usually drink liquor?

1. Every day
2. At least once a week but not every day
3. At least once a month but less than once a week
4. More than once a year but less than once a month
5. Once a year or less

13. When you drink **liquor**, how many drinks, on the average, do you usually drink at any one time?

1. Over 6 glasses
2. 5 or 6 glasses
3. 3 or 4 glasses
4. 1 or 2 glasses
5. Less than 1 glass/none

**The following are common results that other students have reported. Please put the corresponding number from the scale below into the box next to each question.**

1. At least once in the past two months and at least one additional time during the past year.
  2. At least once within the past two months but not during the rest of this past year.
  3. Not during the past two months but at least once during the past year.
  4. Has happened at least once in my life but not during the past year.
  5. Has not happened to me.
- 
- |  |     |
|--|-----|
| 15. Had a hangover                                       | [ ] |
| 16. Gotten nauseated/vomited from drinking               | [ ] |
| 17. Driven a car after having several drinks             | [ ] |
| 18. Driven a car when you know you had too much to drink | [ ] |
| 19. Driven a car while drinking                          | [ ] |
| 20. Come to class after having several drinks            | [ ] |
| 21. Cut class after several drinks                       | [ ] |
| 22. Missed a class because of a hangover                 | [ ] |
| 23. Arrested for a DUI (Driving Under the Influence)     | [ ] |

- |   |     |
|---|-----|
| 24. Been criticized by someone you were dating because of your drinking                                 | [ ] |
| 25. Had trouble with the law because of drinking  | [ ] |
| 26. Lost a job because of drinking  | [ ] |
| 27. Received a lower grade because of drinking  | [ ] |
| 28. Gotten into trouble with school administration because of behavior resulting from drinking too much | [ ] |
| 29. Gotten into a fight after drinking  | [ ] |
| 30. Thought you might have a problem  | [ ] |
| 31. Damaged property, pulled a false alarm, or other such behavior after drinking                       | [ ] |
| 32. Participated in a drinking game   | [ ] |

### Brief Comprehensive Effects of Alcohol (B-CEOA)

Choose from **DISAGREE TO AGREE** depending on whether you expect the effect to happen to you **IF YOU WERE UNDER THE INFLUENCE OF ALCOHOL**. These effects will vary, depending on the amount of alcohol you typically consume. Check one answer for the four boxes after each statement.

There are no right or wrong answers.

1. After a few drinks of alcohol, I would be more likely to enjoy sex more.

- 1[ ]Disagree  
 2[ ]Slightly Disagree  
 3[ ]Slightly Agree  
 4[ ]Agree

2. After a few drinks of alcohol, I would be more likely to be courageous.

- 1[ ]Disagree  
 2[ ]Slightly Disagree  
 3[ ]Slightly Agree  
 4[ ]Agree

3. After a few drinks of alcohol, I would be more likely to feel calm.

- 1[ ]Disagree  
 2[ ]Slightly Disagree  
 3[ ]Slightly Agree  
 4[ ]Agree

4. After a few drinks of alcohol, I would be more likely to be a better lover.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

5. After a few drinks of alcohol, I would be more likely to act sociable.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

6. After a few drinks of alcohol, I would be more likely to talk to people more easily.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

7. After a few drinks of alcohol, I would be more likely to feel peaceful.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

8. After a few drinks of alcohol, I would be more likely to be brave and daring.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

9. After a few drinks of alcohol, I would be more likely to take risks.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

10. After a few drinks of alcohol, I would be more likely to feel dizzy.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

11. After a few drinks of alcohol, I would be more likely to feel moody.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

12. After a few drinks of alcohol, I would be more likely to be clumsy.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

13. After a few drinks of alcohol, I would be more likely to be loud, boisterous, or noisy.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

14. After a few drinks of alcohol, I would be more likely to act aggressively.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

15. After a few drinks of alcohol, I would be more likely to feel guilty.

- 1[ ]Disagree
- 2[ ]Slightly Disagree
- 3[ ]Slightly Agree
- 4[ ]Agree

### Drinking Motives Measure (Revised)

**Instructions:** Thinking of all the times you drink, how often would you say that you drink for each of the following reasons?

	Almost Never/ Never	Some of the Time	Half of the Time	Most of the Time	Almost always/ Always
1. To forget you worries	1	2	3	4	5
2. Because your friends pressure you to drink	1	2	3	4	5
3. Because it helps you enjoy a party	1	2	3	4	5
4. Because it helps you when you feel depressed or Nervous	1	2	3	4	5
5. To be sociable	1	2	3	4	5
6. To cheer up when you are in a bad mood	1	2	3	4	5
7. Because you like the feeling	1	2	3	4	5
8. So that others won't kid you about <i>not</i> drinking	1	2	3	4	5
9. Because it's exciting	1	2	3	4	5
10. To get high	1	2	3	4	5
11. Because it makes social gatherings more fun	1	2	3	4	5
12. To fit in with a group you like	1	2	3	4	5
13. Because it gives you a pleasant feeling	1	2	3	4	5
14. Because it improves parties and celebrations	1	2	3	4	5
15. Because you feel more self-confident and sure of yourself	1	2	3	4	5
16. To celebrate a special occasion with friends	1	2	3	4	5
17. To forget about your problems	1	2	3	4	5
18. Because it's fun	1	2	3	4	5
19. To be liked	1	2	3	4	5
20. So you won't feel left out	1	2	3	4	5

**Peer Alcohol Related Behaviors (Peer Modeling)**

**Instructions:** Please indicate your answer to the following two questions by placing a check in the box that most accurately represents your answer.

	None	Some	Most	All of them
About how many of your friends drink beer, wine or liquor on a fairly regular basis?				
About how many of your friends drink beer, wine or liquor from time to time?				

**Drinking Norms Rating Form**

1. Consider a typical week during the past month. Please fill in a number for each day of the week indicating the typical number of drinks **YOU** usually consume on that day, and the number of hours you usually drink on that day.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Number of Drinks</b>							
<b>Number of Hours</b>							

2. Consider a typical week during the past month. Please fill in a number for each day of the week indicating the number of drinks a typical **WAYNE STATE STUDENT OF YOUR SAME SEX** usually consumes on that day.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Number of Drinks</b>							

3. Consider a typical week during the past month. Please fill in a number for each day of the week indicating the typical number of drinks **YOUR BEST FRIENDS** usually consume on that day.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Number of Drinks</b>							

**Perceived Norms Questionnaire**

Instructions: Please place a check mark in the category that best represents your answers to the following questions.

How would your **FRIENDS** respond if they knew:

	Strong Disapproval	Moderate Disapproval	Mild Disapproval	Wouldn't Care	Mild Approval	Moderate Approval	Strong Approval
You drank alcohol every weekend?							
You drank alcohol daily?							
You drove a car after drinking?							
You drank enough to pass out?							

How would your **PARENTS** respond if they knew:

	Strong Disapproval	Moderate Disapproval	Mild Disapproval	Wouldn't Care	Mild Approval	Moderate Approval	Strong Approval
You drank alcohol every weekend?							
You drank alcohol daily?							
You drove a car after drinking?							
You drank enough to pass out?							



### Parental Monitoring Questionnaire

**Instructions:** Please place a check mark in the appropriate category that indicates your answer for the following questions.

I would like you to think back to when you were in high school. At that time did your parents/guardian:

	Never	Almost Never	Sometimes	Almost Always	Always
1. Know what you did in your free time?					
2. Know who you had as friends during your free time?					
3. Usually know what type of homework you had?					
4. Know what you spend your money on?					
5. Usually know when you had an exam or paper due at school?					
6. Know how you did in different subjects at school?					
7. Know where you went when you were out with friends at night?					
8. Normally know where you went and what you did after school?					
9. Had your parents ever had no idea where you were at night?					

**REFERENCES**

- Abar, C., Abar, B., & Turrisi, R. (2009). The impact of parental modeling and permissibility on alcohol use and experienced negative drinking consequences in college. *Clinical Psychology Review, 34*(6-7), 542-547.
- Abar, C., & Turrisi, R. (2008). How important are parents during the college years? A longitudinal perspective of indirect influences parents yield on their college teens' alcohol use. *Addictive Behaviors, 33*(10), 1360-1368.
- Adams, C., & Nagoshi, C. (1999). Changes over one semester in drinking game playing and alcohol use and problems in a college student sample. *Journal of Substance Abuse, 20*, 97-106.
- Andrews, J. A., Tildesley, E., Hops, H., & Li, F. (2002). The influence of peers on young adult substance use. *Health Psychology, 21*.4, 349-357.
- Aquilino, W. S. (2001). Long-Term Effects of Parenting Practices During Adolescence on Well-Being Outcomes in Young Adulthood. *Journal of Family Issues, 22*(3), 289-294.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480. doi: 10.1037//0003-066x.55.5.469
- Arnett, J. J. (2004). *Emerging adulthood: the winding road from the late teens through the twenties*: Oxford University Press.
- Arnett, J. J. (2005). The developmental context of substance use in emerging adulthood. *Journal of Drug Issues, 35*(2), 235.
- Arria, A., Kuhn, V., Caldiera, K., O'Grady, K., Vincent, K., & Wish, E. (2008). High school drinking mediates the relationship between parental monitoring and college drinking: A longitudinal analysis. *Substance Abuse Treatment, Prevention, and Policy, 3*(6).

- Avolio, B., Rotundo, M., & Walumbwa, F. (2009). Early life experiences as determinants of leadership role occupancy: The importance of parental influence and rule breaking behavior. *Clinical Psychology Review, 20*(3), 329-342.
- Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., & Johnston, L. D. (1997). *Smoking, drinking, and drug use in young adulthood: The impacts of new freedoms and new responsibilities. Research monographs in adolescence.* . Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Baer, J. S. (2002). Student factors: Understanding individual variation in college drinking. *Journal of Studies on Alcohol, 51*(4), 40-53.
- Barnes, G. M., Hoffman, J. H., Welte, J. W., Farrell, M. P., & Dintcheff, B. A. (2006). Effects of Parental Monitoring and Peer Deviance on Substance Use and Delinquency. *Journal of Marriage and Family, 68*(4), 1084-1104. doi: 10.1111/j.1741-3737.2006.00315.x
- Beck, K. H., & Treiman, K. A. (1996). The relationship of social context of drinking, perceived social norms, and parental influence to various drinking patterns of adolescents. *Addictive Behaviors 21.5*, 633-644.
- Bogg, T., & Finn, P. R. (2009). An Ecologically Based Model of Alcohol-Consumption Decision Making: Evidence for the Discriminative and Predictive Role of Contextual Reward and Punishment Information. *Journal of Studies on Alcohol and Drugs, 73*(3), 446-457.
- Borsari, B., & Carey, K. B. (2001). Peer influences on college drinking: A review of the research. *Journal of Substance Abuse 13*, 391-424.
- Borsari, B., & Carey, K. B. (2003). Descriptive and Injunctive Norms in College Drinking: A Meta-Analytic Integration. *Journal of Studies on Alcohol, 64*(3), 331-341.

- Borsari, B., & Carey, K. B. (2006). How the quality of peer relationships influences college alcohol use. *Drug Alcohol Rev.*, 25(4), 361-370.
- Boyle, J. R. (2006). Perceived Parental Approval of Drinking and Its Impact on Problem Drinking Behaviors Among First-Year College Students. *Journal of American College Health*, 54(4), 238-244. doi: 10.3200/jach.54.4.238-244
- Brim, O. G. (1975). Macro-structural influences on child development and the need for childhood social indicators. *American Journal of Orthopsychiatry*, 45, 516-524.
- Bronfenbrenner, U. (1977). Toward an Experimental Ecology of Human Development. *American Psychologist*, 32(7), 513-531.
- C, M., N, K., S, M., O, B., & H, M. (1995). Patterns of DSM-IV alcohol abuse and dependence symptoms in adolescent drinkers. *Journal of Studies on Alcohol*, 56, 672-680.
- Caetano, R., & Cunradi, C. (2002). Alcohol dependence: a public health perspective. *Addiction*, 97(6), 633-645. doi: 10.1046/j.1360-0443.2002.00184.x
- Carey, K. B. (1995). Alcohol-related expectancies predict quantity and frequency of heavy drinking among college students. *Psychology of addictive behaviors*, 9(4), 236-241. doi: 10.1037/0893-164x.9.4.236
- Chen, C.-H. (2008). Why Do Teachers Not Practice What They Believe Regarding ASPCA Technology Integration? *The Journal of Educational Research*, 102(1), 65-75. doi: 10.3200/joer.102.1.65-75
- Chilcoat HD, Breslau N, & JC, A. (1996). Potential barriers to parent monitoring: Social disadvantage, marital status, and maternal psychiatric disorder. . *Journal of the American Academy of Child & Adolescent Psychiatry* 35, 1673-1682.

- Clapp, J. D. (2000). Deconstructing Contexts of Binge Drinking Among College Students. *The American journal of drug and alcohol abuse*, 26(1), 139-154. doi: 10.1081/ada-100100596.
- Clerkin, E., & Barnett, N. (2012). The separate and interactive effects of drinking motives and social anxiety symptoms in predicting drinking outcomes. *Addictive Behaviors*, 37, 674-677.
- Collins, R., & Marlatt, G. A. (1981). SOCIAL MODELING AS A DETERMINANT OF DRINKING BEHAVIOR: IMPLICATIONS FOR PREVENTION AND TREATMENT. *Addictive Behaviors*, 6, 233-239.
- Connors, G. J., Maisto, S. A., & Derman, K. H. (1992). Alcohol-related expectancies and their applications to treatment. In R. R. Watson (Ed.), *Drug and alcohol abuse reviews: Vol. 3. Alcohol abuse treatment* (pp. 203-231). Totowa, NJ: Humana Press.
- Cooper, M. L., Frone, M. R., Russell, M., & Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology* 69(5), 990-1005.
- Cronin, C. (1997). Reasons for Drinking Versus Outcome Expectancies in the Prediction of College Student Drinking. *Substance Use & Misuse*, 32(10), 1287-1311.
- DeMartini, K., Carey, K. B., Lao, K., & Luciano, M. (2011). Injunctive norms for alcohol-related consequences and protective behavioral strategies: Effects of gender and year in school. *Addictive Behaviors*, 36, 347-353.
- DiClemente, R. J., Wingood, G. M., Crosby, R., Sionean, C., Cobb, B. K., Harrington, K., Oh, M. K. (2001). Parental Monitoring: Association With Adolescents' Risk Behaviors. *PEDIATRICS*, 107(6), 1363-1368. doi: 10.1542/peds.107.6.1363

- Dishion, T. J., & McMahon, R. J. (1998). Parental Monitoring and the Prevention of Child and Adolescent Problem Behavior: A Conceptual and Empirical Formulation. *Clinical Child and Family Psychology Review, 1*(1), 61-75. doi: 10.1023/a:1021800432380
- Dworkin, J. (2005). Risk Taking as Developmentally Appropriate Experimentation for College Students. *Journal of Adolescent Research, 20*(2), 219-241.
- Fillmore, M. T., & Jude, R. (2011). Defining “Binge” Drinking as Five Drinks per Occasion or Drinking to a .08% BAC: Which Is More Sensitive to Risk? *The American Journal on Addictions, 20*(5), 468-475. doi: 10.1111/j.1521-0391.2011.00156.x
- Foldy, E. G., & Buckley, T. R. (2009). Re-Creating Street-Level Practice: The Role of Routines, Work Groups, and Team Learning. *Journal of Public Administration Research and Theory, 20*(1), 23-52. doi: 10.1093/jopart/mun034
- Fromme, K., Stroot, E. A., & Kaplan, D. (1993). Comprehensive effects of alcohol: Development and psychometric assessment of a new expectancy questionnaire. *Psychological Assessment, 5*, 19-26.
- Gaughan, M. (2006). The Gender Structure of Adolescent Peer Influence on Drinking. *Journal of Health and Social Behavior, 47*(1).
- Geisner, I. M., Larimer, M. E., & Neighbors, C. (2004). The relationship among alcohol use, related problems, and symptoms of psychological distress: Gender as a moderator in a college sample. *Addictive Behaviors, 29*, 843-848.
- Gilles, D., Turk, C., & Fresco, D. (2006). Social anxiety, alcohol expectancies, and self-efficacy as predictors of heavy drinking in college students. *Addictive Behaviors, 31*, 388-398.

- Greenfield, T. K. (2000). A 10-year national trend study of alcohol consumption, 1984-1995: is the period of declining drinking over? *American journal of public health (1971)*, *90*(1), 47-52.doi: 10.2105/ajph.90.1.47
- Greenfield, T. K., Harford, T. C., & Tam, T. W. (2009). Modeling cognitive influences on drinking and alcohol problems.(Report). *Journal of Studies on Alcohol and Drugs*, *70*(1), 78(79).
- Grossbard, J. R., Geisner, I. M., Mastroleo, N., Kilmer, J. R., Turrisi, R., & Larimer, M. E. (2009).Athletic identity, descriptive norms, and drinking among athletes transitioning to college. *Addictive Behaviors*, *34*(4), 352-359.
- Ham, L., & Hope, D. (2003). College students and problematic drinking: A review of the literature. *Clinical Psychology Review*, *23*, 719-759.
- Hannum, J., & Dvorak, D. (2004). Effects of Family Conflict, Divorce, and Attachment Patterns on the Psychological Distress and Social Adjustment of College Freshmen.*Journal of College Student Development*, *45*(1), 27-42.
- Hasking, P., Lyyers, M., &Carlopio, C. (2011).The relationship between coping strategies, alcohol expectancies, drinking motives and drinking behaviour.*Addictive Behaviors*, *36*(5), 479-487.
- Hingson, R. (2005). MAGNITUDE OF ALCOHOL-RELATED MORTALITY AND MORBIDITY AMONG U.S. COLLEGE STUDENTS AGES 18–24: Changes from 1998 to 2001. *Annual review of public health*, *26*(1), 259-279.doi: 10.1146/annurev.publhealth.26.021304.144652
- Hingson, R., Zha, W., & Weitzman, E. R. (2009).Magnitude of and Trends in Alcohol-Related Mortality and Morbidity Among U.S. College Students Ages 18-24, 1998-2005.*J Stud Alcohol Drugs Suppl*, *16*, 12-20.

- Hingson, R. W. (2002). Magnitude of alcohol-related mortality and morbidity among US college students ages 18-24. *Journal of Studies on Alcohol*, *63*(2), 136.
- Holmila, M., & Raitasal, K. (December 2005). Gender differences in drinking: why do they still exist? *Addiction*, *100*(12), 1763–1769.
- Horvath, P., & Zuckerman, M. (1993). Sensation seeking, risk appraisal, and risky behavior. *Personality & Individual Differences*, *14*, 41-52.
- Jaccard, J., Blanton, H., & Dodge, T. (2005). Peer Influences on Risk Behavior: An Analysis of the Effects of a Close Friend. *Developmental Psychology* *41*(1), 135-147.
- Jones, B. T., Corbin, W., & Fromme, K. (2001). A Review of Expectancy Theory and Alcohol Consumption. *Addiction*, *91*, 57-72.
- Knee, C., & Neighbors, C. (2002). Self-determination, perception of peer pressure, and drinking among college students. *Journal of Applied Social Psychology*, *32*(3), 522-543.
- Knight, J. R. (2002). Alcohol abuse and dependence among US college students. *Journal of Studies on Alcohol*, *63*(3), 263.
- Korcuska, J. S. (2003). Gender Role Conflict and Sex-Specific Drinking Norms: Relationships to Alcohol Use in Undergraduate Women and Men. *Journal of college student development*, *44*(2), 204-216. doi: 10.1353/csd.2003.0017
- Kuntsche, E., Knibbe, R. A., Gmel, G., & Engels, R. (2005). Why do young people drink? A review of drinking motives. *Clinical Psychology Review*, *25*(7), 841-861.
- LaBrie, J., Ehret, P., Hummer, J., & Prenovost, K. (2012). Poor adjustment to college life mediates the relationship between drinking motives and alcohol consequences: A look at college adjustment, drinking motives, and drinking outcomes. *Addictive Behaviors*, *37*, 379-386.



- LaBrie, J., Hummer, J., Neighbors, C., & Larimer, M. E. (2010). Whose Opinion Matters? The Relationship Between Injunctive Norms and Alcohol Consequences in College Students. *Addictive Behaviors, 35*(4), 343-349.
- LaBrie, J., Lac, A., Kenney, S., & Mirza, T. (2011). Protective behavioral strategies mediate the effect of drinking motives on alcohol use among heavy drinking college students: Gender and race differences. *Addictive Behaviors, 36*, 354-361.
- Larimer, M. E., Kilmer, J. R., & Lee, C. M. (2005). College Student Drug Prevention: A Review of Individually-Oriented Prevention Strategies. *Journal of Drug Issues, 35*(2), 431-456.
- Lau, R. R., Quadrel, M. J., & Hartman, K. A. (1990). Development and change of young adult's preventative health beliefs and behavior: influences from parents and peers. . *Journal of Health and Social Behavior, 31*, 240-259.
- Leigh, B. C. (1989). In search of the seven dwarves: Issues of measurement and meaning in alcohol expectancy research. *Psychological Bulletin, 105*, 361-373.
- Lewis, B. A., & O'Neill, H. K. (2000). Alcohol expectancies and social deficits relating to problem drinking among college students. *Addictive Behaviors, 25*(2), 295-299. doi: 10.1016/s0306-4603(99)00063-5
- Lewis, M. A., & Neighbors, C. (2004). Gender-Specific Misperceptions of College Student Drinking Norms. *Psychology of Addictive Behaviors, 18*(4), 334-339.
- Lo, C. C. (1995). Gender Differences in Collegiate Alcohol Use. *Journal of Drug Issues, 25*, 817-836.
- Lundhal, L., Davis, T., & Adesso, V. (1997). Alcohol expectancies: Effects of gender, age, and family history of alcoholism *Addictive Behaviors, 22*(1), 115-125.

- MacLean, M. G., & Lecci, L. (2000). A comparison of models of drinking motives in a university sample. *Psychology of Addictive Behaviors, 14*, 83-87.
- Markman Geisner, I., Larimer, M. E., & Neighbors, C. (2004). The relationship among alcohol use, related problems, and symptoms of psychological distress: Gender as a moderator in a college sample. *Addictive Behaviors, 29*, 843-848.
- McCreary, D. R. (2002). Binge Drinking in Adulthood: The Influence of Gender, Age, and Beverage Exclusivity. *International Journal of Men's Health, 1.3*, 233-245.
- Neighbors, C., Larimer, M. E., Geisner, I. M., & Knee, C. (2004). Feeling Controlled and Drinking Motives Among College Students: Contingent Self-Esteem as a Mediator. *Self and Identity, 3*, 207-224.
- 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), 434-447.
- Neighbors, C., Lindgren, K., Knee, C., Fossos, N., & DiBello, A. (2011). The Influence of Confidence on Associations Among Personal Attitudes, Perceived Injunctive Norms, and Alcohol Consumption. *Psychology of Addictive Behaviors, 25*(4), 714-720.
- Nguyen, M., & Neighbors, C. (2012). Self-determination, Perceived Approval, and Drinking: Differences between Asian Americans and Whites *Addictive Behaviors*. doi: 10.1016/j.addbeh.2012.10.001
- Nolen-Hoeksema, S., & Harrell, Z. (2002). Rumination, Depression, and Alcohol Use: Tests of Gender Differences. *Journal of Cognitive Psychotherapy, 16*(4), 391-403.

- Nye EC, G, A., & JE, S. (1999). Enhancing alcohol problem recognition: a self-regulation model for the effects of self-focusing and normative information. *Journal of Studies on Alcohol*, 60, 685-693.
- Overbeek, G., Bot, S. M., Meeus, W. H. J., Sentse, M., Knibbe, R. A., & Engels, R. (2011). Where It's At! The Role of Best Friends and Peer Group Members in Young Adults' Alcohol Use. *Journal of Research on Adolescence*, 21(3), 631-638. doi: 10.1111/j.1532-7795.2010.00696.x
- Palfai, T. P. (2003). The influence of alcohol on the activation of outcome expectancies: the role of evaluative expectancy activation in drinking behavior. *Journal of Studies on Alcohol*, 64(1), 111.
- Patock-Peckham, J., King, K., Morgan-Lopez, A., Ulloa, E., & Filson-Moses, J. (2011). Gender-Specific Mediation Links Between Parenting Styles, Parental Monitoring, Impulsiveness, Drinking Control, and Alcohol-Related Problems. *Journal of Studies on Alcohol*, 72(2), 247-258.
- Perkins, H. W. (2002). Social norms and the prevention of alcohol misuse in collegiate contexts. *J Stud Alcohol Suppl.*, 14, 164-172.
- Perkins, H. W. (2002). Surveying the damage: A review of research on consequences of alcohol misuse in college populations. *Journal of Studies on Alcohol*, 14(supplement), 91.
- Pettit, G., Laird, R., Dodge, K., & Bates, J. (2001). Antecedents and Behavior-Problem Outcomes of Parental Monitoring and Psychological Control in Early Adolescence. *Child Development*, 72(2), 583-598.

- Randolph, M. E. (2009). Alcohol Use and Sexual Risk Behavior among College Students: Understanding Gender and Ethnic Differences. *The American journal of drug and alcohol abuse*, 35(2), 80-84. doi: 10.1080/00952990802585422
- Raskin-White, H., McMorris, B. J., Catalano, R. F., Fleming, C. B., Haggerty, K. P., & Abbott, R. D. (2006). Increases in Alcohol and Marijuana Use During the Transition Out of High School Into Emerging Adulthood: The Effects of Leaving Home, Going to College, and High School Protective Factors. *Journal of Studies on Alcohol*, 67(6), 810-822.
- Reis, J., & Riley, W. L. (2000). Predictors of college students' alcohol consumption: Implications for student education. *The Journal of Genetic Psychology*, 161(3), 282-291.
- Rhodes, W. A. S., Edward; McMillan, Tiffany B.; Perrino, Carrol S. (2005). Does Knowledge of College Drinking Policy Influence Student Binge Drinking? *Journal of American College Health*, 54.1, 45-49.
- Rutledge, P., & Sher, K. J. (2001). Heavy Drinking from the Freshman Year into Early Young Adulthood: The Roles of Stress, Tension-Reduction Drinking Motives, Gender and Personality. *Journal of Studies on Alcohol and Drugs*, 62(4), 457-466.
- Sher, K. J., Wood, M. D., Wood, P. K., & Raskin, G. (1996). Alcohol outcome expectancies and alcohol use: A latent variable cross-lagged panel study. *Journal of Abnormal Psychology*, 105(4), 561-574.
- Simons-Morton, B., & Chen, R. (2005). Latent growth curve analyses of parent influences on drinking progression among early adolescents. *J Stud Alcohol*, 66(1), 5-13.
- Steinberg, L., Fletcher, A., & Darling, N. (1994). Parental Monitoring and Peer Influences on Adolescent Substance Use. *Pediatrics*, 93, 1060-1082.

- Talbott, L. L. (2008). Drinking Likelihood, Alcohol Problems, and Peer Influence Among First-Year College Students. *The American journal of drug and alcohol abuse*, 34(4), 433-440. doi: 10.1080/00952990802122655
- TL, K., & Higgins-d'Alessandro. (2003). Attitudinal and normative predictors of alcohol use by older adolescents and young adults. *Journal of Drug Education*, 33, 71-90.
- U.S. Department of Health and Human Services. *Healthy People 2010*, conference edition, Vol. II, pp. 26–29. Washington, DC: USDHHS, 2000.
- Vik, P., Culbertson, K., & Sellers, K. (2000). Readiness to Change Drinking among Heavy-Drinking College Students. *Journal of Studies on Alcohol*, 61, 674-680.
- Webb, A., Bray, J., Adams, G., & Getz, J. (2002). Gender differences in adolescent alcohol use, externalizing and internalizing behavior problems, and peer influence. *Journal of Orthopsychiatry*, 72, 392-400.
- Webb, J. A., Bray, J. H., Getz, J. G., & Adams, G. (2002). Gender, Perceived Parental Monitoring, and Behavioral Adjustment: Influences on Adolescent Alcohol Use. *American Journal of Orthopsychiatry*, 72(3), 392-400. doi: 10.1037/0002-9432.72.3.392
- Wechsler, H. (2002). Trends in College Binge Drinking During a Period of Increased Prevention Efforts: Findings from 4 Harvard School of Public Health College Alcohol Study Surveys: 1993–2001. *Journal of American College Health*, 50(5), 203-217. doi: 10.1080/07448480209595713
- Wechsler, H., Dowdall, G. W., Davenport, A., & Rimm, E. B. (1995). A gender-specific measure of binge drinking among college students. *American Journal of Public Health*, 85(7), 982-985.

- Wechsler, H., & Kuo, M. (2000). College Students Define Binge Drinking and Estimate Its Prevalence: Results of a National Survey. *College Health, 49*, 57-64.
- Weitzman, E. R. (2003). Taking up binge drinking in college: The influences of person, social group, and environment. *Journal of adolescent health, 32*(1), 26.
- Weitzman, E. R. (2004). Poor mental health, depression, and associations with alcohol consumption, harm, and abuse in a national sample of young adults in college. *The journal of nervous and mental disease, 192*(4), 269.
- Werner, M. J., Walker, L. S., & Greene, J. W. (1993). Alcohol expectancies, problem drinking, and adverse health consequences. *Journal of Adolescent Health, 14*, 446-452.
- White, A. M. (2006). Many College Freshmen Drink at Levels Far Beyond the Binge Threshold. *Alcoholism, clinical and experimental research, 30*(6), 1006-1010. doi: 10.1111/j.1530-0277.2006.00122.x
- White, H. R., McMorris, B. J., Catalano, R. F., Fleming, C. B., Haggerty, K. P., & Abbott, R. D. (2006). Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: the effects of leaving home, going to college, and high school protective factors. *Journal of Studies on Alcohol, 67*(6), 810(813).
- Wood, M. D., Read, J. P., Mitchell, R. E., & Brand, N. H. (2004). Do Parents Still Matter? Parent and Peer Influences on Alcohol Involvement Among Recent High School Graduates. *Psychology of Addictive Behaviors 18.1*, 19-30.

**ABSTRACT****GENDER DIFFERENCES IN COLLEGE STUDENT DRINKING: THE  
RELATIONS OF SOCIAL AND COGNITIVE CONSTRUCTS**

by

**Leah Terian****May 2013****Advisor:** Dr. Cheryl Somers**Major:** Educational Psychology**Degree:** Doctor of Philosophy

Emerging adulthood is an important developmental stage for individuals ages 18-25 and can be categorized as a period of increased autonomy and identity exploration. It can also be a time in which there is increased exploration of risk taking behaviors, such as alcohol consumption. Current literature suggests that alcohol consumption is an increasing trend on college campuses, with more college students experiencing negative consequences such as alcohol related accidents, injury, and even death. The current study sought to examine the social (peer modeling, descriptive norms, injunctive norms, and parental monitoring) and cognitive (alcohol expectancies and drinking motives) factors that contribute to college drinking, in addition to examining whether gender differences existed among these variables. Participants for this study included 250 college students (108 males and 142 females), ranging in age from 18-25, enrolled at a large Midwestern university. The sample included various different ethnic groups, including African American (n=59, 23.6%), Caucasian (n=112, 44.8%), Asian/Pacific Islander (n=19, 7.6%), Hispanic (n=7, 2.8%), Middle Eastern (n=25, 10%), and Other (n=28, 11.2%). In regard to year in school the majority of the sample identified themselves as being either a Junior (n=70, 38%) or Senior (n=62, 24.8%), and most participants reported a GPA of

3.5 (n=89, 35.6%). Results from this study found that, for cognitive factors, the largest contributions to college drinking were alcohol expectancies (sociability subscale) and drinking motives (social subscale). When examining social factors, results found that the largest contributions were made by peer modeling, descriptive norms (best friend subscale) and injunctive norms (parents subscale). The combination of both factors explained a greater portion of the variance than did either factor alone. Surprisingly, no gender differences were found among any of the variables studied.



## AUTOBIOGRAPHICAL STATEMENT

### EDUCATION

Wayne State University	Detroit, MI
PhD Candidate, Educational Psychology	May 2006-Current
Wayne State University	Detroit, MI
M.A. Marriage & Family Psychology	Sept 2004-May 2006
Michigan State University	East Lansing, MI
B.S. Psychology, Michigan State University	August 1998-May 2002

### WORK EXPERIENCE

McLaren Oakland Hospital	Department of Behavioral Health	Oct 2011-Current
--------------------------	---------------------------------	------------------

*Clinical Manager*

Responsibilities include: screening and selection of applicants; assign work, set priorities, and evaluate unit operation and programs; provide training, orientation, consultation and guidance to interdisciplinary staff; create policies, procedures and practice guidelines utilizing in-depth knowledge of the delivery of mental health care; establish guidelines and performance expectations for the staff; observe workers' performance, provide feedback and periodically evaluate employee performance.

Havenwyck Hospital	Substance Abuse Unit	Aug 2007-Oct 2011
--------------------	----------------------	-------------------

*Therapist*

Provide individual, group and family therapy, psychological testing and neuropsychological assessments, conduct insurance authorizations and clinical reviews, perform intake assessments.

Havenwyck Hospital	Substance Abuse Unit	Jan 2006-Aug 2007
--------------------	----------------------	-------------------

*Substance Abuse Counselor*

Provide didactic groups to patients and families, teach patients and families appropriate coping skills to deal with maladaptive behaviors, monitor activities of daily living and encourage independent behavior with appropriate interventions on a daily basis, complete appropriate documentation, including progress notes and group notes, assist with admissions, intakes and discharges from treatment program.

New Oakland Child Adolescent and Family Center	Day Hospital	Nov 2002-Aug 2005
--	--------------	-------------------

*Milieu Counselor*

Provided therapeutic intervention for patients in need of crisis management, facilitated therapeutic group discussion and/or activities on a daily basis, educated patients on appropriate coping techniques, promoting an increase in positive daily functioning, conducted interactions with adults, adolescents and children from different backgrounds and variety of disorders/diagnosis, provided treatment plans/goals as well as daily progress notes for patients while in day treatment.

### INTERNSHIPS

New Oakland Child Adolescent and Family Center	Day Hospital	March 2007-Aug 2007
--	--------------	---------------------

*Therapist*

Provide individual, family and couples therapy for patients admitted to intensive day treatment program, provide psychological testing and assessments for patients in day treatment program, conduct group therapy for children, adolescents and adults, conduct intake assessments and emergency admissions.

Wayne State University	Counseling and Psychological Services	May 2006-Dec 2006
------------------------	---------------------------------------	-------------------

*Therapist*

Provided individual and couples therapy, conducted triage assessments, intakes, crisis management, provided psychological testing evaluations for students with learning disabilities, co-facilitated a campus wide Depression Screening, provided outreach services to students and staff including psycho-educational seminars, and suicide/crisis prevention protocols, obtained both individual and group supervision by doctoral level psychologists, social workers and counselors.