COGNITION, EMOTION REGULATION AND ALCOHOL CONSUMPTION IN COLLEGE STUDENTS

By

SHEREEN LAFAYE TRAYLOR

Bachelor of Science in Biology
Houston Baptist University
Houston, Texas
2005

Master of Science in Educational Psychology
Oklahoma State University
Stillwater, Oklahoma
2008

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY
July, 2012

COGNITION, EMOTION REGULATION AND

ALCOHOL CONSUMPTION IN

COLLEGE STUDENTS

Dissertation Approved:

Dr. Donald Boswell

Dissertation Adviser

Dr. Julie Clark

Dr. Julie Koch

Dr. Katye Perry

Outside Committee Member

Dr. Sheryl A. Tucker

Dean of the Graduate College

TABLE OF CONTENTS

Chapter Page

LIST OF TABLES

Table Page

CHAPTER I

INTRODUCTION

Difficulties stemming from alcohol consumption have been well documented. The body of literature surrounding alcohol and related hardships is dense and well-established for diverse populations. Research has indicated that individuals in the U.S. may drink more frequently and have more occurrences of intoxication than people that live in other countries (Lindman & Sjoholm, 2000). Within the general population of the U.S. alcohol usage has been linked to a variety of factors such as stress reduction (Sher, Bartholow, Peuser, Erickson, & Wood, 2007) and impairments processing emotions (Carton, Bayard, Paget, Jouanne, Varescon, Edel, et al. et al., 2010). In the realm of social situations, (de Castro, 1990) found that the amount of alcohol consumed by an adult population tends to increase with the number of people present, and in a more recent study, drinking behaviors of peers were linked to individual alcohol consumption (Wang, Liu, Zhan, & Shi, 2010). Gender differences have further indicated that men have a greater tendency to use alcohol to cope with stress than women (Udo et al., 2009). Additionally, the relationship between family and environmental issues has been investigated. Research has indicated that male and female alcoholics are more likely to have biological parents who are alcoholics when compared to the general population (Sher, 1997), and low socioeconomic status has been highlighted as a risk factor for heavier drinking

and other alcohol related problems than alcohol use and problems associated with persons of high socioeconomic status (Velleman, 1992). Students enrolled in college and university settings have been identified as struggling with alcohol related issues.

Problem

Problems with use and abuse of alcohol have lead to the recognition of alcohol as a public health problem among college students (Nelson, Xuan, Lee, Weitzman, & Wechsler, 2009). Research has shown that two out of five students can be identified as heavy drinkers (O'Malley & Johnston, 2002). Among college students, alcohol use and abuse has been related to unintentional deaths from injuries with automobiles, deaths due to automobile accidents and unintentional non-traffic related deaths and risky sexual behaviors (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; Simons, Lantz, Klichine, & Ascolese, 2005). Discoveries from this population have yielded connections between alcohol consumption and self-control difficulties (Farris, Ostafin, & Palfai, 2010), self-injurious behavior (Serras, Saules, Cranford, & Eisenberg, 2010), and motivation (Armeli, Conner, Cullum, & Tennen, 2010; Osberg et al., 2010; Shamloo & Cox, 2010).

Gender differences among college student populations in alcohol usage have been noted, with men drinking more to feel high, and women drinking more due to depressed feelings (Harrell & Karim, 2008). Males have been found to drink more frequently than females and research has largely focused on male drinking behaviors (Capraro, 2000; R. J. Williams & Ricciardelli, 1999). Past studies have indicated that men have more occurrences of alcohol disorders than women, and that younger persons have more occurrences of alcohol abuse and dependence (Grant et al., 2006). Indeed, the chances that individuals will engage in episodes of heavy drink are highest between the ages of 21 and 24 years (Dawson, Grant, Stinson, & Chou, 2004). College and university students are vulnerable to alcohol related problems; therefore, it is necessary to identify and explore the factors that are related to alcohol consumption. Two areas of research that have been associated with drinking behaviors which may be helpful in addressing the alcohol consumption habits of college students are meta-cognitions and emotional intelligence.

Meta-cognition is a term used to identify the combination of two mechanisms: the information individuals have about their thoughts and mental states, and the coping strategies people utilize that impact their thoughts and mental states (Spada, Caselli, & Wells, 2009). Research exploring metacognitions and alcohol usage has indicated links between: beliefs and the expectations of consuming alcohol (Spada, Moneta, & Wells, 2007), beliefs about the need to control thoughts and problem drinking (Spada, et al., 2009), anxious and depressed feelings and alcohol use (Spada & Wells, 2005), and alcohol dependency and dysfunctional schemas (Roper, Dickson, Tinwell, Booth, & McGuire, 2010). Though studies have revealed that alcohol influences the recognition of certain forms of affect (Curtin, Patrick, Lang, Cacioppo, & Birbaumer, 2001), and research has explored the relationships present between metacognitions and alcohol use. Some research has indicated a potential relationship between alcohol consumption and the ability to engage in thought processes. Steele and Josephs (1990) defined alcohol myopia as the abatement of the range of ability and perception to engage in deductive thought when under the influence of alcohol. The effect of this is that the ability to process information goes down as the amount of alcohol consumed increases, causing individuals to focus only on the most noticeable cues from their environment (Steele & Josephs, 1990). The discovery of a relationship between alcohol and the ability to engage in cognitive processes raises a question of whether cognition levels before the consumption of alcohol impact individual drinking behaviors. An area of the research that is currently unexplored is whether cognition and cognitive developmental issues relate to alcohol usage.

As previously stated, metacognitions are composed of two elements: information individuals have about their thoughts and mental states, and the coping strategies that impact their thoughts and mental state (Spada, et al., 2009). From this definition, it seems that one factor that influences meta-cognition is cognition itself, or the way an individual organizes information from the world around them (Kramer, Kahlbaugh, & Goldston, 1992). This theory of cognitive development was based on the work of a number of researchers that identified models of reasoning used by adults to navigate everyday situations. Kramer, Kahlbaugh and Goldston (1992) took existing models and furthered

research on cognitive development by proposing a new theory. Their theory posited that there are three levels of organization of cognitive development, which included absolute, relativistic and dialectical thinking. According to this theory, an absolute thinker is one who views the world as fixed without contradictions, while a relativistic thinker views knowledge as changing, and being influenced by its context with no set order. In contrast, a dialectical thinker views all events as coming from contradictions between other events, and all elements of the world are related to one another (Kramer, et al., 1992). Since college students have a vast age range, it is the proposal of this researcher that differences in cognitive development, are likely to impact alcohol usage behaviors. Prior research has explored the relationship between drinking behaviors and the cognitive development level of female college students.

One theory proposed that traditional college students were at a particular level of cognitive development. Women in the traditional college years were believed to be in a state of dedifferentiation, during which time they are cognitively rigid and engage in absolute thinking (Schnur & MacDonald, 1988). It was proposed that as they progress through college, they become more mature, with an integrated feminine identity allowing them to be more tolerant, differentiated, and cognitively flexible (Perry, 1970). Schnur and MacDonald (1988) explored the relationship between drinking behaviors and female identity development. The sample was composed of 75 undergraduate females, with an age range of 18 to 25 years. Cognitive development level was determined by a combination of three different measures: primarily, the Thematic Apperception Test (TAT) measured deprivation and enhancement scores to access sexual identity. Lastly, measures of social desirability and assertiveness were also included to study cognitive development level. Results indicated that younger persons with drinking problems displayed more feminine scores (indicative of lower levels of dedifferentiation), and older individuals displayed more masculine scores (indicative of lower levels of identity integration) than alcohol users with no drinking problems; therefore, it was concluded that problem drinkers had not entered the cognitive developmental stage of dedifferentiation and integration. For all age groups, problem drinking was significantly associated

with deviation from age-appropriate cognitive development stage (Schnur & MacDonald, 1988). As findings in this study found support for a relationship between cognitive development and alcohol consumption, the theory of alcohol myopia may help explain the negative impacts of alcohol use and abuse among college students.

When considering the theories of Kramer, Kahlbaugh and Goldston (1992) and Steele and Josephs (1990) a theory of the relationship between alcohol consumption and cognitive development level is formed. As alcohol has been found to decrease an individual's ability to process information, it is possible that alcohol consumption impacts processing and behaviors in such a way that individuals functioning on a particular level of cognitive development begin to process information as a person that is functioning on a lower level of cognitive development. For example, if someone is on the relativistic level and consumes high amounts of alcohol, might the impact of alcohol myopia result in them processing information and behaving like someone that is an absolute thinker? Beyond this, it is possible that cognitive development level may present treatment opportunities, with interventions being aimed at particular levels of cognitive development so that they are more readily comprehendible by individuals. Before research is conducted to explore whether the theory of alcohol myopia impacts functioning after consuming alcohol, whether there is a relationship between cognitive development and alcohol consumption must first be evaluated. This study acts as a first step to investigate the possibility of a relationship between cognitive development and alcohol consumption. An additional area of research with interesting prospects for alcohol use in this study is the area of emotional processing.

Emotional processing difficulties have been connected to individuals with dependence on drugs and/or alcohol (Carton, et al., 2010). Emotional intelligence is defined as the ability to understand how emotions come about and how individuals manage both their emotions and the emotional reactions of those around them (Trinidad & Johnson, 2002). Emotional intelligence, similar to meta-cognition research, has diverse aspects. In a population of individuals in early adolescence, persons with low emotional intelligence were at greater risk for abuse of alcohol

(Trinidad & Johnson, 2002). The impacts of emotion regulation on college populations may have implications for treatment and prevention on campuses, as persons involved in negative drinking behaviors may also have differences in emotional processing which relate to the amount of alcohol they consume. Because emotional intelligence has a dense body of literature and a variety of applications, one area in particular, emotion regulation will be utilized in this study to explore college student alcohol consumption.

Two processes of emotion regulation, expressive suppression and cognitive reappraisal , have been identified (Gross & John, 2003). Cognitive reappraisal is defined as changing the way one thinks about an emotional situation, before emotions are activated, for the purpose of changing its emotional impact. In contrast, expressive suppression occurs when individuals reduce behaviors that express emotion once in a situation that elicits emotion (John & Gross, 2004). A variety of studies have addressed emotion regulation; however, no study has specifically addressed the relationship between the ways college students regulate their emotions and the amount of alcohol they consume.

Information from work with cognitive schemas has supported the hypothesis that persons who avoid affective arousal are more likely to abuse alcohol more severely (Brotchie, Hanes, Wendon, & Waller, 2007). Studies by Gross and John (2003) and those by Brotchie, Hanes, Wendon, and Waller (2007) imply that a similarity may exist between the emotion regulation type of expressive suppression and avoiding affect. Due to this, it is possible that individuals using expressive suppression might be more likely to abuse alcohol (Magar, Phillips, & Hosie, 2008). In contrast, other research has proposed risky behaviors to be associated with cognitive reappraisal (Heilman, Crişan, Houser, Miclea, & Miu, 2010; Sokol-Hessner et al., 2009; Yurtsever, 2008).

Purpose of the Study

The purpose of this research will be to explore the relationships among alcohol usage, cognitive development and emotion regulation in order to increase understanding of the factors that impact college student alcohol consumption. This relationship, if present, may provide a means to

assess alcohol usage contributors to determine whether cognitive development is a factor that could be improved and thus be an area of intervention to decrease negative alcohol use behaviors.

Research Question

My global research question is: what is the relationship of age, education, gender, cognitive reappraisal of emotions, expressive suppression of emotions and cognitive development with alcohol consumption?

CHAPTER II

REVIEW OF THE LITERATURE

Alcohol Consumption

Difficulties stemming from alcohol consumption have been well documented. The body of literature surrounding alcohol and related hardships is dense and well-established for diverse populations. Research has indicated that indicated that individuals in the U.S. may drink more frequently and have more occurrences of intoxication than people that live in other countries (Lindman & Sjoholm, 2000). Within the general population of the U.S. alcohol usage has been linked to a variety of factors such as stress reduction (Sher, et al., 2007) and impairments processing emotions (Carton, et al., 2010). Social factors have been linked with alcohol consumption, and the amount of alcohol consumed has been found to increase with the number of people present, and in a more recent study, drinking behaviors of peers were linked to individual alcohol consumption (de Castro, 1990; Wang, et al., 2010). Gender differences have further indicated that men have a greater tendency to use alcohol to cope with stress than women (Udo, et al., 2009). Additionally the relationship between family and environmental issues has been investigated. Research has indicated that male and female alcoholics are more likely to have biological parents who are alcoholics when compared to the general population (Sher, 1997), and social class has been highlighted as a risk factor for heavier drinking and other alcohol related problems (Velleman, 1992). Students enrolled in college and university settings have been

identified as struggling with alcohol related issues.

Problems with use and abuse of alcohol have lead to the recognition of alcohol as a public health problem among college students (Nelson, et al., 2009). Research has shown that two out of five students can be identified as heavy drinkers (O'Malley & Johnston, 2002). Among college students, alcohol use and abuse has been related to unintentional deaths from injuries with automobiles, deaths due to automobile accidents and unintentional non-traffic related deaths and risky sexual behaviors (Hingson, et al., 2002; Simons, et al., 2005). Discoveries from this population have yielded connections between alcohol consumption and self-control difficulties (Farris, et al., 2010), self-injurious behavior (Serras, et al., 2010), and motivation (Armeli, et al., 2010; Osberg, et al., 2010; Shamloo & Cox, 2010).

The focus of alcohol research has shifted from the identification of general factors, such as drunken relief (Rogers, 1992) to more specific associations and connections between emotions and behaviors related to alcohol usage. To identify and evaluate the motivations for and treatment of drinking problems, diverse areas have been explored. One area that has been studied in relation to alcohol usage concerns the schemas associated with alcohol dependency. One such study by Roper, Dickson, Tinwell, Booth and McGuire (2009) in the United Kingdom investigated schema changes after the completion of a treatment program. The study included a total of 100 participants. Of the participants, 50 were clinically alcohol dependent (29 males and 21 females) ranging in age from 24-69 years. The non-clinically dependent group also contained 50 participants (30 males and 20 females) ranging in age from 20-57 years. After three weeks of abstinence, the alcohol dependent group improved in psychological distress, such as anxiety, and in maladaptive schema beliefs, except for self-sacrifice and unrelenting standards. At the second evaluation, scores for psychological distress were at normal range; however, schemas regarding social isolation, self-sacrifice, emotional inhibition, and insufficient control were not significantly different between the two groups. These findings suggest that changes can happen without schema-level intervention, thus other forms of treatment might be helpful for persons suffering

from alcohol dependence (Roper, et al., 2010). Treatments that assess and consider how individuals understand relationships may be helpful, as persons may have different alcohol use behaviors due in part to a lack of understanding of the potential impacts of such behaviors on others. In addition, emotion inhibition may be an area used to impact the treatment of alcohol abuse and dependence.

Armeli, Conner, Cullum, and Tennen (2010) conducted a longitudinal study on the drinking motives of college students to understand the relationship between avoidant coping, social enhancement motives, psychological distress and drinking frequency. Their population included 530 (276 female and 254 male) undergraduate students representative of a particular college population in both ethnic composition and SAT scores. Individuals recruited for the study reported using alcohol no less than twice in the past month. Results indicate that age was negatively associated with drinking to cope and drinking for social enhancement. Age was also negatively related to drinks per day and drinking intensity. Persons that drank for social enhancement did so more frequently when a change in negative affect occurred, and those people that drank as a means of coping consumed alcohol less frequently when experiencing heightened negative affect. This has important implications for college students, as stress and the need to make friends may interact with social enhancement motives leading to the excessive use of alcohol in settings, such as parties. Findings suggest that when coping is the purpose of drinking alcohol, individuals may drink less alcohol when experiencing negative affect than when experiencing other emotional states. Further, age is negatively related to alcohol use in some instances, such as drinking for social enhancement and drinking intensity. This study presents interesting prospects. Primarily it presents support for the viewpoint that looking for social relationships impacts drinking behaviors. By this line of reasoning, it is likely that understanding of relationships and the self impacts the amount of alcohol people consume. Evaluation of the relationship between cognitive development and drinking is needed to determine whether these factors impact the drinking behaviors of college students. More exploration in this area is needed

as this study did not include factors such as cognitive development level, age or level of education for participants. Due to the high amounts of alcohol abuse on college campuses, it is possible to view substance abuse on campuses as a function of the age of the individuals involved. Though persons abusing alcohol on college campuses may do so partially based on age (Grant, et al., 2006), conflicting research findings indicate that lower ages are not always linked to higher levels of alcohol abuse.

A recent study by Wang, Liu, Zhan and Shi (2010) produced findings which contradict the finding that lower age is associated with higher amounts of alcohol use. The study evaluated alcohol usage in relation to work-to-family and family-to-work conflict with a sample that included 57 (8 female and 49 male) Chinese participants from five factories in Beijing. All participants had an average age of 33 years, and reported drinking at normal levels. Outcomes of the research revealed that in this sample, alcohol use had a positive relationship with age and peer drinking norms, but a negative relationship with education, which is in contrast to past results (Armeli, et al., 2010). Further, peer drinking norms were negatively related to education (Wang, Liu, Zhan, & Shi, 2010). This study did not use college students, and was not conducted in America. It is important to discover whether findings will be reproduced in the United States with a college sample to determine whether these results are better understood by a cultural versus empirical explanation.

Grant et al., (2006) conducted a national study on the abuse and dependence of alcohol for the years 2001-2002 compared with 1991-1992. Participants were 43,093 persons aged 18 and above that were diverse based on gender, ethnicity, race and socioeconomic status. Results from this study indicated that from 2001-2002 alcohol abuse and dependence occurred more frequently among males, and younger persons. Abuse was found to be greater amongst Caucasian populations than for African-American, Asian-American and Latino persons. When alcohol dependence was considered, Caucasians, Native Americans and Latinos had higher occurrences than those in the Asian community. This study did not consider specific differences

or similarities that might occur in the college population, such as education level, which may provide more understanding of the previously mentioned results.

Harrell and Karim (2008) looked at gender differences in coping uses of alcohol and symptoms of depression. Participants for the research included 406 (266 female and 140 male) college students from Midwestern universities. The average age of the participants was 19.2 years, and ethnic heritage was assessed. Similarly to the article by (Armeli, et al., 2010) level of education was not provided. At the close of the study, analysis revealed that for males, drinking to feel high was positively related how frequently men used alcohol, alcohol use problems and binge drinking. In contrast, for females only depressive symptoms were significantly linked to alcohol related problems. Other findings showed that females and males at public universities reported more alcohol difficulties and binge drinking behaviors than those at private universities, and that males and females attending private universities reported more depressive symptoms than their public university counterparts. Among males and females, frequency of alcohol use and binge drinking were predictors of using substances to cope and drinking to feel high. Overall, for females alcohol-related problems were related to depressive symptoms, but for males, alcohol related problems were related to drinking to feel high (Harrell & Karim, 2008). Conclusions from this study indicate that drinking behaviors and the source of alcohol behaviors may be different for males and females. An additional area of alcohol research that seems to be connected to both cognition and emotion regulation is that of meta-cognitive beliefs.

Meta-cognitive beliefs have been defined as information persons hold about their cognition and internal states, and the coping strategies that impact those internal states and cognitions (Wells, 2000). Research has explored the association between metacognitions and alcohol usage as well as emotions associated with problem drinking. One such study directed by Spada and Wells (2005) involved 97 (53 female; 44 male) European undergraduates and professionals. Individuals in the study ranged in age from 18-66 years. Results indicated that the amount of alcohol used on a weekly basis was positively related to the metacognitions of:

positive beliefs about worry, negative beliefs about thoughts concerning uncontrollability and danger, beliefs about cognitive confidence, beliefs about need to control thoughts and cognitive self confidence. Relationships were found between positive beliefs about worry, negative beliefs about thoughts concerning uncontrollability and danger, which indicated proneness to problem drinking in the presence of such metacognitions (Spada & Wells, 2005). Though this study yielded information on connections between metacognitions and alcohol consumption, there are a variety of issues that were not explored. This study did not evaluate how individuals process emotion, but instead, thoughts about this behavior. Additionally, the level of cognitive development of individuals in the study and level of education were not evaluated. Finally, this was not conducted with a sample in the United States. The identification of metacognitions in alcohol research forms a link between the cognitions, emotions and drinking behaviors of individuals. It is possible that results would differ in United States college students and that cognitive development, defined as the ways that people organize and understand the world around them, impact results. The theoretical concept of alcohol myopia implies one possible outcome of alcohol use. Steele and Josephs (1990) defined alcohol myopia as the abatement of the range of ability and perception to engage in deductive thought. The effect of this is that the ability to process information goes down as amount of alcohol consumed increases, causing individuals to focus only on the most noticeable cues from their environment (Steele & Josephs, 1990). The theory of alcohol myopia has implications for the relationships between cognition and alcohol consumption.

Cognitive Development and Alcohol Consumption

According to the cognitive developmental theory by Kramer, Kahlbaugh and Goldston (1992) three levels of cognitive development are identified as absolute thinking, relativistic thinking and dialectical thinking. These levels of cognitive development have differing senses of control, with the lowest level, absolute thinking, holding the belief that change comes only from external forces. Further, absolute thinkers view the world as fixed and without contradictions.

Persons at the second level of cognitive development, relativistic thinkers, view knowledge as changing, and being influenced by its context with no set order. In contrast to both of these views, a dialectical thinker views all events as coming from contradictions between other events. At this level of understanding, all elements of the world and social interactions are related to one another (Kramer, et al., 1992). The relationship between level of cognitive development and the amount of alcohol one consumes has been explored in female college students.

Schnur and MacDonald (1988) conducted research to explore the relationship between drinking behaviors and cognitive developmental stage basic identity in college women. The sample was composed of 75 undergraduate females, with an age range of 18 to 25 years. Cognitive development level was determined by a combination of three different measures: deprivation and enhancement scores on the Thematic Apperception Test (TAT) were used to measure sexual identity and measures of social desirability and assertiveness were also included. Results indicated that younger persons with drinking problems displayed more feminine scores, and older individuals displayed more masculine scores than alcohol users with no drinking problems; therefore, the researchers concluded that problem drinkers had not entered the cognitive developmental stage of dedifferentiation and integration. For all age groups, problem drinking was significantly associated with deviation from age-appropriate cognitive development stage (Schnur & MacDonald, 1988). This provides support for the possibility that there is a relationship between cognitive development and alcohol consumption. Findings from this study need to be explored further. Current research is need to determine whether these findings are supported when utilizing an empirical measure of cognitive development level for male and female college students.

Curtin, Patrick, Lang, Cacioppo, and Birbaumer (2001) posed the question of whether alcohol would lessen emotion by impeding certain types of cognition. Participants for this study included 48 (24 female and 24 male) undergraduates aged 21 years or older that reported experiencing moderate alcohol doses, but no alcohol problems. Results indicated that alcohol

affects the emotional response of fear by affecting higher systems in the brain's cortex that are active in detecting and recognizing emotional cues in a particular context (Curtin, et al., 2001). Outcomes of this study suggest that alcohol consumption might impact cognitions of individuals differently depending on their level of cognitive development. Persons under the influence of alcohol were found to show impaired attention to threat and fear response when their attention was divided, but not when the threat was the focus. This has implications for college student alcohol usage because persons operating on lower levels of cognitive development may have fewer cognitive resources once the attenuating effect of alcohol is present. Thus they may be less likely to halt negative drinking behaviors, especially when under the influence of alcohol. This is a possibility that needs further exploration.

Blume, Marlatt, and Schmaling (2000) evaluated effects of alcohol consumption that have implications for a connection between drinking behaviors and cognitive development. Their research explored executive cognitive function (ECF) and drinking behaviors. For the purposes of this study ECF was measured by short term memory and self-regulation of behavior. Participants included 50 college students with a mean age of 22 years that met the criteria for alcohol dependence. Findings revealed that recent consequences of drinking, combined with higher verbal memory predicted greater awareness of problem drinking and larger desire to change scores (Blume, Marlatt, & Schmaling, 2000). This study also forms a connection between cognition and the amount of alcohol consumed. These results suggest that other aspects of cognition may be important in understanding alcohol behaviors; however, a variety of areas were left unexplored in this study. This study did not include gender differences, level of education or ethnicity reports, which are important to obtain a better understanding of populations as well as to identify areas salient to treatment and prevention.

Assessments of the factors that may be related to college student drinking behaviors are important for a variety of reasons, some of which involve health concerns. Davis et al., (2010) conducted research to evaluate how alcohol expectancies influence cognition processes that take

place in risky sexual behaviors of women. Participants were from a West Coast city and included 94 women of diverse ethnicities, and moderate social drinking habits. Most participants attended college, and less than half were employed. For this study, years of education were not assessed, and males were not included in the sample. Results of the study indicated that the presence of alcohol in situations increased unprotected sex intentions through effects on cognitive appraisals. Further, alcohol increased the participant's perception of sexual potential in a given situation. Circumstances with greater chances for sexual activity increased participant chances of seeing larger numbers of benefits and fewer risks to having intercourse. Findings indicated that cognitive assessments of what occurs before a woman's decision to have unprotected sex might be helpful in prevention of such behaviors (Davis et al., 2010), and further indicates an association between cognitive development and college student drinking behaviors. This supports the possibility that cognition might have implications for treatment, but also for prevention of health issues that are connected to alcohol use. The linkage between alcohol, emotion, and cognition has lead to hypotheses concerning the ways in which these three interact.

Research by Shamloo and Cox (2010) explored relationships between motivation, sense of control and the alcohol consumption of college students. The participants were 94 (40 male and 54 female) students with an average age of 20 years, and similar alcohol consumption habits. This sample included no graduate students, and years of education were not evaluated. Further, the ethnic composition of participants was not provided. Results indicated that adaptive and intrinsic motivation were negatively related to weekly drinking, while extrinsic motivation was positively related to drinking, and negatively related to adaptive motivation. Sense of control was positively related to intrinsic motivation, and persons with adaptive motivation were shown to: perceive more self control, be intrinsically motivated, feel less helpless and drink less alcohol (Shamloo & Cox, 2010). These findings support a connection between motivation and cognitive development. According to the findings of Shamloo and Cox (2010) persons with lower levels of

cognitive development may have more external motivations and drink greater amounts alcohol than those operating on higher levels of cognitive development.

Emotional Intelligence and Regulation

Emotional processing difficulties have been connected to individuals with dependence on drugs and/or alcohol (Carton, et al., 2010). Emotional intelligence (EI) is defined as the ability to understand how emotions come about and personal managing emotions as well as identifying emotions in others (Trinidad & Johnson, 2002). Brackett, Mayer and Warner (2004) conducted an assessment of EI and the relationship of it to the life space areas of college students. Sample analyses were conducted on 330 (241 female and 89 male) mostly Caucasian (96%) participants between the ages of 17 and 20 years. Analysis revealed that males with lower EI reported more: poor quality relationships, incidences with illicit drugs, excessive alcohol usage, and deviant behavior than females with low EI (Brackett, Mayer, & Warner, 2004). The sample did include differences in education, and a variety of ethnicities were not included. Further, results imply that EI may be a factor impacting substance abuse. When considered with gender differences in substance use reported in the aforementioned articles, it is important to identify whether cognitive development is related to substance usage.

Research by Bracket, Mayer and Warner (2004) was elaborated upon by the work of Ghee and Johnson (2008). They explored the role of EI in situations involving alcohol amongst college students. Volunteers for this study included 242 college students aged 18 to 26 years from various ethnic/racial backgrounds. Over half of the participants were female, and 45% were males. Ghee and Johnson found that persons with higher EI were less likely to connect their alcohol use with their perceptions of peer alcohol norms. In contrast to (Brackett, et al., 2004), Ghee and Johnson found no direct relationship between EI and the ability to predict frequency of alcohol use and peer norms of alcohol consumption. Inconsistencies between Brackett, et al. (2004) that connect lower levels of EI to problematic alcohol use, and findings by Ghee and Johnson (2008), which suggested that EI may be a decrease, or have no impact on alcohol

consumption habits; indicate that further research is need to explore the relationship between alcohol and types of EI. Years of education were not considered for the purposes of this study. Due to the wide interpretations and applications of EI, for the purpose of this research, one aspect of EI, emotion regulation, will be evaluated in conjunction with college student alcohol behaviors and cognitive development.

Two processes of emotion regulation: expressive suppression and cognitive reappraisal have been identified in research (Gross & John, 2003). Cognitive reappraisal is defined as changing the way one thinks about an emotional situation, before emotions are activated, in order to change its emotional impact. In contrast, expressive suppression is when individuals reduce behaviors that express emotion once in a situation that elicits emotion (John & Gross, 2004). Few studies have evaluated the concepts of emotion regulation and alcohol consumption, though the relationship has been suggested by researchers.

Groeschel, Wester and Sedivy (2010) conducted research to explore whether the gender role conflicts (GRC) for men influenced behaviors of alcohol consumption and help seeking. Participants for this study included 399 males with an average age of 22 years, from a public Midwestern university. The sample resembled the makeup of the university according to ethnic composition, and majority of the sample were seniors. Findings indicated that for this sample, as drinking motives and negative alcohol-related consequences increased, so did GRC and negative attitudes toward psychological help. Further, restrictive emotionality was found to be significantly related to GRC, personal consequences, alcohol dependence, and alcohol problems (Groeschel, Wester, & Sedivy, 2010). The connection between restrictive emotionality and drinking behaviors suggest a connection between the ways people regulate emotions and the consumption of alcoholic beverages. It is important for more information to be obtained concerning the relationship between drinking behaviors, cognitive development and the regulation of emotions to assist in prevention and education about factors related to drinking in both male and female college campus populations.

As the ability to manage emotions is a component of EI, research has been focused on one aspect of EI, the regulation of emotions. Research directly measuring the relationship between drinking behaviors of college students and emotion regulation type has not been conducted, but emotion regulation has been explored in conjunction with non-suicidal self-injury (NSSI). Crowell et al. (2005) explored various correlates of NSSI in adolescent females. Participants included 46 females ranging in age from 14 to 18 years of Caucasian, Latina, African-American and mixed heritage descent from the Seattle, Washington area. Participants included 23 females engaging in self-injury and 23 age matched controls that did not. Family income was assessed and differences between group incomes were not significant. Outcomes of reduced serotonin and respiratory sinus arrhythmia supported emotion dysregulation and impulsivity models of self-injury. Researchers proposed that it is possible that persons involved in self-injury may display stronger physiological responses to sad moods, which may predispose them to over-whelming emotions, and result in avoidance of emotional stimuli. These findings support the exploration of emotional suppression as suppression has been connected to alcohol consumption and NSSI, which both effect college populations (Crowell et al., 2005).

Similar to the research conducted by Crowell et al (2005), Hasking, Momeni, Swannell, and Chia (2008) explored NSSI in an adult population. The participants included 211(164 female and 47 male) individuals, aged 18-30 years from Australia. Most (80%) of the population was comprised of university students, though the level of education of participants was not identified. Results implied that when compared with those that did not self-injure, those who engaged in self-injury reported more avoidant coping and more risky drinking behaviors. Further, between groups that reported no self-injury, mild self-injury and moderate/severe self-injury a significant difference was found in the use of emotional suppression, though the authors were unable to detect where the difference was, suggesting a trend of increased emotional suppression with the use of non-suicidal self-injury. Relationships between emotion regulation and substance usage were not evaluated, but were implied as both behaviors increased with the occurrence of non-

suicidal self-injury (Hasking, Momeni, Swannell, & Chia, 2008). In addition to the aforementioned results, these findings support the importance of exploring emotion regulation and alcohol behaviors in a U.S. college population, as drinking problems and regulating emotions appear to be related.

Research conducted by Williams and Hasking (2010) surveyed coping, emotion regulation and alcohol use as modifiers of psychological dysfunction and NSSI. Participants included 289 (211 female and 78 male) individuals from Australia between 18 and 30 years-of-age. A majority of the individuals reported a diagnosis of depression, and for the purposes of this study level of education and ethnicity were not recorded. Findings indicated that emotional reappraisal was positively correlated with problem and emotion focused coping, and that emotional suppression was negatively related to problem and emotion focused coping. Alcohol consumption was found to be negatively related to emotional reappraisal, and unrelated to emotional suppression. Avoidant coping showed a positive significant relationship with emotional suppression, and a negative, non-significant relationship with emotional reappraisal, this contrasts previous studies (Crowell et al., 2005; Hasking et al., 2008) in which emotional suppression was linked with non-suicidal self-injury (Appelhans & Luecken, 2006; F. Williams & Hasking, 2010). More research is needed to determine a connection between alcohol consumption and emotion regulation in a U.S. college student population that also considers education. A more recent study evaluated relationships between college student drinking and NSSI.

Serras, Saules, Cranford and Eisenberg (2010) also conducted research on correlates of NSSI and a variety of other factors, such as alcohol usage in college students. Participants included 5,689 students (69.6% undergraduate and 30.4% graduate) from 13 universities across the United States that were at least 18 years of age. Among undergraduate and graduate participants, races were identified as Caucasian, Asian, African-American, Latino, and Multi-racial individuals. Results indicated that 16% of undergraduates and 10% of graduates had

engaged in NSSI in the past year. Rates of self-injury were higher at public versus private universities, and persons identifying as gay, lesbian, bisexual or transgender (GLBT) reported higher rates of self-injury than those identifying as heterosexual. Frequent binge drinkers and drug users had increased risk of NSSI, with highest incidences of SIB occurring with persons using both cigarettes and illicit drugs (Serras, et al., 2010). As college populations are vulnerable to abusing substances, it is important to expand these findings by including other factors such as education level, cognitive development and emotion regulation in alcohol usage. Due to the relationship between alcohol use and NSSI, information related to the use of alcohol may be helpful in treating other behaviors, such as NSSI. The current proposed research may provide information for exploration of other areas.

Leith and Baumeister (1996) conducted a series of studies to explore connections between mood and self-defeating behaviors. Participants were university students and included: 129 male and female participants in study one, 48 males in study two, 41 (19 male and 22 female) students in study three, 48 students of undisclosed sex in study four, 33 (19 female and 14 male) students of various ethnicities/races in study five, and 33 students of undisclosed sex in study six. Findings revealed that emotionally upset individuals have stronger tendencies to both make poor choices and to be more impulsive than persons that are not. Further, results indicate that persons experiencing both upset and emotional stirring are more likely to be self-destructive and make risky decisions, than those that experience only upset or arousal. Finally, findings suggest that emotions such as anger and embarrassment suppressed cognitive activity so that upset people did not consider consequences of their behaviors (Leith & Baumeister, 1996). This has strong implications for drinking as style of emotion regulation may impact alcohol consumption and behavioral outcomes. Understanding more about the relationship between alcohol use and emotions will increase understanding and provide foundations for treatment of alcohol behaviors on college campuses

The impacts of poor emotion regulation in college populations may have implications for prevention and treatment of substance abuse on campuses. In addition, persons involved in negative drinking behaviors may also have cognitive development issues that impact the treatment of substance abuse. In an attempt to further explore the concepts by Gross and John (2003), research has been conducted evaluating the impact of both expressive suppression and cognitive reappraisal beyond those with NSSI. Research conducted by Magar, Philips and Hosie (2008) was similar to studies evaluating risky sexual behaviors and cognition (Davis, et al., 2010), but instead explored the relationship between overall risk taking and types of emotion regulation. This study included 134 (45 male and 89 female) participants, ranging in age from 17 to 47 years. No level of education, or ethnicity was reported, and the study was not conducted with a United States population. Results indicated that cognitive reappraisal served as a predictor of factors linked to rational decision making, whereas expressive suppression was found to be associated with risky behaviors such as problem drinking. Magar et al. (2008) suggested that cognitive reappraisal may be a more effective way to regulate emotions so that feelings do not become overwhelming and impact decision making. In contrast, persons using expressive suppression do not appear to regulate emotions; therefore, they may be exposed to diverse changes in action (Magar, et al., 2008). Later research; however, yielded conflicting results.

Heilman, Crisan, Houser, Miclea and Miu (2010) explored whether the two feelings of fear and disgust could inform the impact of emotion regulation on persons making decisions. This question was tested by completing two different experiments. The first study involved 60 (56 female and 4 male) students from a university, and the second included 44 (33 female and 11 male) students from a university. Results indicated that use of cognitive reappraisal increased risk taking by way of lessening familiarity with negative emotion, whereas expressive suppression was found to be ineffectual in the regulation of uncomfortable feelings, and did not lessen risk aversion. Findings suggested that cognitive reappraisal may lead to a belief of excessive control that decreases risk aversion. Further, use of expressive suppression does not

lessen the experience of negative emotion; therefore, attitudes towards risk are not altered by its use. These findings contradict those by (Magar, et al., 2008), which found expressive suppression to be linked to risky behaviors, not cognitive reappraisal. No difference was found between risk taking and emotion regulation of positive emotions (Heilman, et al., 2010). This study evaluated the feelings of fear and disgust, but did not look at drinking behaviors. As excessive drinking is a type of risk taking, the type of emotion regulation associated with it needs further exploration and has large implications when the drinking habits of college students are considered. Additionally, theories proposed by both Magar et al. (2008) and Heilman et al. (2010) have proposed two possible phenomena: first that use of cognitive re-appraisal might decrease negative experiences while drinking resulting in increased abuse (Magar, et al., 2008), or second, that use of expressive suppression might result in use of alcohol to appear calm and not emotionally disturbed(Heilman, et al., 2010). Additional study is needed to explore these possibilities.

Sokol-Hessner et al., (2009) examined the physiological effects of loss aversion and cognitive reappraisal. This study consisted of two experiments. The first included 27 female and 13 male participants ranging between 19 and 25 years of age, and the second involved 29 participants (sex not provided) ranging in age from 18 to 24 years. Analysis from study one revealed that the relationship between physical response to the experience of loss and loss aversion are impacted by perspective. In this study, the use of cognitive reappraisal decreased participant reluctance to lose. In study two, only persons that were able to lessen their aversion to loss by way of changing their perspective were successful in reducing their physiological response to loss outcomes (Sokol-Hessner, et al., 2009). Findings in this study appear to support those by Heilmen et al. (2010) which indicated that risky behaviors were increased by the use of cognitive reappraisal. This research did not include alcohol consumption, cognitive development or a college campus sample, and was not conducted in the U.S., all factors which could impact

results and warrant further exploration. Additional studies have been conducted that connected emotion regulation type to business management.

Yurtsever (2004) explored the role of emotion regulation in negotiation. The sample for his study consisted of 104 (39 female and 65 male) managers in Turkey. The average age of participants was 32 years. Of the sample, 85 were university graduates and 19 had achieved a master's degree. Findings from this study indicated that persons using cognitive reappraisal strategies made more profits than those using expressive suppression. In contrast, expressive suppression seemed to be of more use when there was no time to re-evaluate negotiation. Yurtsever proposed the use the need for further cultural aspects in this process to be considered as some collectivistic cultures could be more likely to suppress feelings such as anger than individualistic cultures (Yurtsever, 2004). This study was not conducted in the U.S. and did not include college students; further drinking behaviors and the potential impact of cognitive development were not explored. An additional study was used to explore expectation of reward.

Yurtsever (2008) explored relationships between negative factors and negotiator profit. This sample included 228 (126 female and 102 male) undergraduates in Turkey. Of the participating individuals 130 were in the experimental group and 98 were in the control group. Again cognitive reappraisal was related to greater profit for negotiators. This finding supporting the positive impact of cognitive reappraisal lead to the hypothesis that the use of cognitive reappraisal resulted in individuals not dwelling on situations despite the receipt of negative feedback. Expressive suppression was associated with negative profit. Yurtsever suggested that findings related to expressive suppression may be explained by the hypothesis that persons using suppression try to manage their emotions, and subsequently, do not have access to information that could have resulted in more useful responses. Cognitive reappraisal was negatively related to misrepresentation of information, whereas suppression was positively related. Additionally, cognitive reappraisal had a significant, positive relationship with tolerance of ambiguity (Yurtsever, 2008). Concerning alcohol consumption, these findings suggest that those using

cognitive reappraisal may be more likely to alter the ways they think about alcohol consumed, which might result in greater drinking of alcoholic substances. This research was also not conducted with a U.S., college student population, and did not assess level of education, ethnicity, or gender, thus re-enforcing the need to evaluate such regulation strategies while considering in the aforementioned population characteristics.

Delgado, Gillis and Phelps (2008) created a study to investigate how emotion regulation strategy impacted physiological and neural relationships to understanding reward expectations. This question was answered by the participation of 15 persons on which demographic information was not provided. Delgado and colleagues found that the emotion regulation strategy of cognitive reappraisal can lessen physiological and neural responses to reward expectation (Delgado, Gillis, & Phelps, 2008). These findings support some obtained in previous studies (Magar, et al., 2008; Sokol-Hessner, et al., 2009; Yurtsever, 2004, 2008) that cognitive reappraisal decreases emotional impacts and has implications for drinking behaviors as users of cognitive reappraisal may have decrease physiological responses to stimuli resulting in increased drinking behaviors. Research is need to explore the relationship between alcohol usage, cognitive development and emotion regulation to assist in understanding potential protective factors and treatment foci needing implementation amongst college student samples in the U.S.

Summary

Many gains have been made in understanding alcohol abuse, as well as the social and individual factors that impact its usage. The aforementioned accomplishments have allowed the current focus of research to shift to areas of differences in cognitive development and the regulation of emotions. Areas for growth that can be used to improve treatment and prevention of abuse and dependency include research factors such as: college student populations, cognitive development implications and clarification of associations between regulation type and drinking. As knowledge about these factors is obtained, the need of those affected by substance use and abuse will be better satisfied.

CHAPTER III

METHODOLOGY

Sample Characteristics

Participants for this study included 141 adult individuals currently identified as undergraduate, graduate or professional students from a combination of listserv. Thirty-five participants failed to complete this internet based study in its entirety, and their partial responses were not used in analyses. Additionally, four participants were removed from the sample because they indicated that they were not currently enrolled in, or classified as an undergraduate, graduate or professional student in a college or university. Therefore, a total of 39 respondents were not used in data analyses, which resulted in a total of 102 completed and usable surveys. As can be seen from Table 1, the full sample included 102 participants (80 women: 22 men). Originally, age was going to be evaluated to specifically describe the sample and to conduct analyses; however, a data entry error resulted in ages being recorded as groupings. The sample included two groups. The first included participants ages 18-25, which totaled 57 participants. The second group was composed of persons aged 26 and above and included 45 participants. The ethnicity of the sample was diverse, but skewed, including a majority of Caucasian participants (Caucasian = 80: African-American = 10: Native-American = 3: Biracial/Multiracial = 3:

Latino =2: Asian/Pacific Islander = 2: Other = 2). Ninety-eight of the participants attended a college or university classified as public, and four attended a private college or university. Of the 102 participants sampled, 37 identified as undergraduate students and 65 were classified as graduate or professional students. See Table 1 for demographic characteristics of the sample.

Table 1

Demographic Characteristics of the Sample

Characteristic	Total Participants (N=102)
Age	
18-25	57
26 and Above	45
Ethnicity	
Latino	2
African-American	10
Caucasian	80
Asian/Pacific Islander	2
Native American	3
Biracial/Multiracial	3
Other	2
Gender	
Female	80
Male	22
School Type	
Public	98
Private	4
Level of Education	
Undergraduate	37
Graduate/Professional School	65

Data were primarily collected from a public listserv database. The database had a connection link on the internet homepage of a comprehensive Midwestern university. The public listserv database contained the email addresses of listserv administrators for a variety of organizations, interest groups, as well as graduate and undergraduate majors at colleges and universities across the United States. These listserv administrators were sent an offer of

participation email embedded with the link to this study that they were asked to forward to members of their listserv. Listserv administrators that agreed to this offer forwarded the request letter and link to members of the listserv, who then determined whether to participate in the study. Approximately 150 emails were sent to listserv administrators, which had no fewer than 300 members on their listserv. Participants responding to the email request sent to listserv administrators were not given an incentive for their participation. The survey took approximately 45 minutes to complete.

Data were also collected from a public, state-funded, Midwestern university. An overview of this study was posted on the research system of the College of Education. Students enrolled in courses using this research system signed up for timeslots if they were interested in participating in the study. Those who participated and completed the surveys were given one point of extra credit for their efforts. All participation in this research by listserv members and university students was voluntary.

In order to increase the research pool, this study also utilized email forwarding requests (snowballing technique). Each participant who responded to a participation request clicked a link that navigated them to an informed consent page attached to the internet-based surveys. Individuals who did not give their consent to participate were instructed to disregard the email they received. Individuals who chose to participate gave their consent by clicking the "Next" button at the bottom of the page, which was located below the statement "By clicking here and completing the survey, you are giving consent to participate," and were then connected to the first page of the study. Participants who completed this internet based survey first completed a demographic questionnaire. Responses on this questionnaire were used to identify the sample, and to determine eligibility. Participants then completed three additional surveys: the Social Paradigm Beliefs Inventory (SPBI), the Emotion Regulation Questionnaire (ERQ) and the Alcohol Use Disorders Identification Test (AUDIT). A copy of the informed consent pages are located in Appendixes B and C.

Assessments and Measures

Demographics Questionnaire. Participants were asked to provide their age, sex, education level, college type and ethnicity. Participants were also asked whether they were currently identified as a student. A copy of the demographic questionnaire is in Appendix B.

Social Paradigm Belief Inventory (SPBI). The SPBI is an instrument developed by Kramer, Kahlbaugh and Goldston (1992). It is a twenty-seven item, forced choice instrument used to identify three general levels of cognitive development level. The first stage, absolute thinking, occurs when individuals see the world as being stable and fixed, with changes occurring based on outside forces. To the absolute thinker, contradiction is seen as incorrect, and people are viewed as being unchangeable (Kramer, et al., 1992). The second stage is relativistic thinking. This level includes individuals who view knowledge as being influenced by its contexts, which are continually changing. Relativism focuses on the here and now and does not provide a medium for integrating knowledge across contexts. Individuals at the relativistic thinking level adhere to values and have strong beliefs in growth (Kramer, Kahlbaugh & Goldston, 1992). The third stage, dialectical thinking, is present when individuals view the development of all phenomena as a result of the stress, or push and pull that occurs between events. In this view contradictions between events are resolved and result in new formations that are then placed under pressure, resulting in a pattern of continuous change. In this view all events are interrelated (Kramer, Kahlbaugh & Goldston, 1992).

Individuals are asked to select the statement that mostly resembles their own thinking. Participants are given one point for an absolute response, two points for a relativistic response and three points for a dialectical response. Scores are added across the twenty-seven items for a possible total of eighty-one points. For the purpose of this study, the levels of absolute, relativistic and dialectical thinking will be viewed as continuous variables. A Chronbach's alpha coefficient of .75 for the continuous variables of absolute, relativistic and dialectical items was computed for

the current sample. Past studies have identified Chronbach's alpha coefficients for absolute, relativistic and dialectical items of .60, .83, and .84 respectively (Kramer, et al., 1992). Additionally, Kramer, Kahlbaugh and Goldston reported that the test-retest correlation over a 2-week period was .77.

Emotion Regulation Questionnaire (ERQ). The ERQ was developed by Gross and John (2003). It is a 10-question, Likert type scale from 1 (strongly disagree) to 7 (strongly agree). The ERQ measures two strategies of emotion regulation used in everyday life (Gross & John, 2003; John & Gross, 2004). Cognitive reappraisal is a change that occurs when an individual constructs an emotion inducing situation in a way that alters its emotional effect (6 items). Expressive suppression is defined as the act of restraining the behaviors that are associated with the expression of an emotion (4 items) (Gross & John, 2003). Higher scores on each scale indicate greater usage of the associated strategy of emotion regulation. For the current study, Chronbach's alpha reliabilities for cognitive reappraisal and expressive suppression were .80 and .76 respectively. Past ERQ research obtained alpha reliabilities for cognitive reappraisal for males and females of .72 and.79 respectively; for expressive suppression, alpha reliabilities for males and females were .67 and.69 respectively (John & Gross, 2004).

The Alcohol Use Disorders Identification Test (AUDIT). The AUDIT consists of 10 questions pertaining to recent alcohol use, dependence, symptoms, and related problems. The four domains of the AUDIT are addressed as follows. Questions one through three measure the level of alcohol consumed, four through six measure individual drinking behaviors, seven through eight assess adverse reactions due to usage, and nine through ten identify alcohol-related problems (Babor, Fuente, Saunders & Grant, 1992). Alpha reliability for the current study was .72. Historically, the AUDIT has an average reliability of .83 across evaluated studies from 2002-2007 (Reinert & Allen, 2007). Furthermore, the test-retest reliability is recorded in The Alcohol Use Disorders Identification Test Guidelines for Use in Primary Care having an alpha coefficient of .86 (Babor, Higgins-Biddle, Saunders & Monterio, 2001). Results from a study conducted by

Rubin et al., (2006) found that 102 participants screened by phone in the U.S. yielded a test-retest coefficient of .87 after one week. Results are calculated by totaling the scores ranging from zero to four on each of the ten items. Individuals with scores ranging between zero and seven are in zone one and may profit from alcohol education. Individuals in zone two have scores ranging from eight to fifteen and may profit from advice on reduction of hazardous drinking. Zone three is comprised of individuals with a score of 16-19, for which advice, brief counseling and monitoring might be effective, and zone four includes persons with scores of 20 and above, for which referrals, diagnostic evaluations and treatment may be effective (Babor, Higgins-Biddle, Saunders & Monterio, 2001).

Analysis

My global research question was: are age, level of education (undergraduate or graduate/professional student), gender, cognitive reappraisal, expressive suppression and cognitive development, predictive of the amount of alcohol an individual will consume? In order to answer this question, multiple regression analyses were computed using the Statistical Package for the Social Sciences (SPSS) 20 software program to perform the analyses between the criterion and predictor variables.

Limitations

The data for this study were collected via internet; therefore, the sample was limited to: persons that were registered to receive emails as part of a listserv and students that were either involved in a student organization or enrolled in a class in the College of Education of a public Midwestern university. Furthermore, the sample was composed of college students; however, a larger number of those participants were in graduate or professional school and not classified as undergraduate students. The sample also included a larger number of students enrolled in a public as opposed to a private university. In addition to this, a majority of the participants in this sample identify themselves as Caucasian, which may result in a lack of generalizability to culturally diverse college students. Finally, individuals were included and excluded based only

on the criteria of whether they were currently enrolled in a college or university; therefore, some of the students may have been from different regions which may have affected results. Due to the factors including geography and purposive sampling without randomization, caution should be made when generalizing these results.

CHAPTER IV

RESULTS

Recruitment

Data for this study were collected from 8/1/2011 to 10/1/2011. Participants were informed of this study by two means. Primarily individuals were notified via email solicitations that were sent to listserv owners and student group leaders. Secondly, information about the study was posted on a university research portal for the College of Education of a comprehensive Midwestern university. Individuals that participated were chosen using a combination of purposive and snowball sampling techniques. A summary of the means and standard deviation s of the sample are presented in Table 2.

Table 2

Sample Means and Standard Deviations

Variable	Mean	Standard Deviation
AUDIT	4.980	3.872
Cognitive Development	62.05	7.218
Cognitive Reappraisal	30.177	6.055
Expressive Suppression	12.92	4.941

Statistics and Data Analysis

In addition to the means and standard deviations of the full sample of participants, the means and standard deviations of the instruments utilized in this study are separated by level of education in Tables 3 and 4.

Table 3

Means and Standard Deviations of Undergraduate Students

Undergraduate (n=37)	Mean	Standard Deviation
AUDIT	4.351	3.817
Cognitive Development	57.432	5.650
Cognitive Reappraisal	31.487	6.530
Expressive Suppression	13.135	4.928

Table 4

Means and Standard Deviations of Graduate/Professional Students

Graduate/Professional (n=65)	Mean	Standard Deviation
AUDIT	5.339	3.886
Cognitive Development	64.692	6.696
Cognitive Reappraisal	29.431	5.684
Expressive Suppression	12.8	4.982

In order to assess the relationship of education, gender, cognitive reappraisal, expressive suppression and cognitive development with Audit scores a multiple correlation/ regression analysis was conducted. Multiple regression analysis determined that alcohol consumption as measured by the AUDIT did not vary as a function of education, gender, cognitive reappraisal of emotions, expressive suppression of emotions and cognitive development. Together, education, gender, cognitive development and emotion regulation type accounted for about 7% of the variability in alcohol consumption [$F_{6, 95} = 1.314$; p=.258]. Results of this analysis are presented in Table 5.

Table 5

Regression Coefficients with AUDIT Scores as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Standard Error	Beta		
AUDIT (dependent variable)	6.170	4.412		1.399	.165
Education	1.486	1.072	.185	1.386	.169
Gender	-.272	.976	-.029	-.278	.781
Age	-.679	.936	-.088	-.726	.470
Cognitive Development	-.032	.062	-.060	-.523	.602
Cognitive Reappraisal	-.065	.064	-.101	-1.012	.314
Expressive Suppression	.140	.080	.178	1.749	.084

In order to further assess the relationship between each of the independent variables and the dependent variable (AUDIT scores), a series of bivariate correlations were calculated and are presented in Table 6. As can be seen from this table the only variable found to be related to scores on the AUDIT was expressive suppression.

Table 6

Bivariate Correlations and Significance Levels

	AUDIT	Gender	Education	Age	Cognitive Development	Cognitive Reappraisal	Expressive Suppression
AUDIT	1	-.102: p=.309	.123: p=.109	-.026: p=.397	-.008: p=.468	-.124: p=.107	.199: p=.022*
Gender		1	-.148: p=.138	.034: p=.735	.107: p=.284	.023: p=.816	-.188: p=.059
Education			1	.547: p=.000**	.486: p=.000**	-.164: p=.050*	-.033: p=.372
Age				1	.320: p=.001**	-.105: p=.148	-.171: p=.043*
Cognitive Development					1	-.056: p=.287	-.070: p=.244
Cognitive Reappraisal						1	-.024: p=.405
Expressive Suppression							1

*p < .05
**p < .001

CHAPTER V

DISCUSSION

The global research question posed in this study yielded unexpected results. The factors of gender, education, cognitive development level and the emotion regulation styles of expressive suppression and cognitive reappraisal in concert were not useful in predicting the amount of alcohol consumed by college students. Interestingly, only one of the proposed five variables alone had any relationship to alcohol use behaviors. A relationship was found between alcohol consumption and the emotion regulation style of expressive suppression. In addition to this finding, relationships between variables were found that, though not the focus of this study, have implications for further research. Positive relationships were found between level of education and the three variables of age, cognitive development and cognitive reappraisal. Age was also found to be positively related to cognitive development, but negatively related to the use of expressive suppression. Significant relationships resulting from this study warrant further exploration.

Expressive suppression was found to be related to the consumption of alcohol and age, and a variety of factors may have contributed to this. Primarily, as mentioned in the methodology section, an error in data collection resulted in participants being placed into one of two age groups.

This error limited the variability that might have been associated with age and other factors in the study; therefore, a variety of other factors might have had relationships if a wider range of age had been available for analysis. The alternate method of emotion regulation, cognitive reappraisal was found to be negatively related to education. Because this study was completed by more graduates than undergraduates, it is possible that this skewed sample impacted this observed relationship. Similarly to the significant relationships in this study, factors that were not found to be related provide useful information.

As mentioned previously, the variables in concert were not helpful in predicting alcohol usage. A variety of factors may have impacted this result. Of key importance is that the participants in this study were primarily Caucasian females. The poor representation of ethnic diversity, males and undergraduate students may further explain the failure of the explored variables to obtain significance. Sample size may also have played a role in the failure of the collection of variables to achieve significance. A large quantity of data from participants was unable to be analyzed due to participant drop out during the cognitive development measure. It is likely that a large number of participants obtained from the public listserv dropped out due to a lack of incentive to remain in the study. The loss of this data may have impacted the poor predictability of the variables as a group and individually. This study aimed to evaluate college student drinking behaviors. Though this was done to address the problem of excessive drinking on college campuses, restricting the population explored to college students may have removed some of the variability needed to properly explore the question posed in this study. Another area of interest, cognitive development, was found to be unrelated to alcohol consumption.

The measure used to evaluate cognitive development, the SPBI has had no normalization sample statistics run since the 1990's. Due to this fact, and the knowledge that the study used was never associated with drinking behaviors, the SPBI may have been an inadequate tool to measure cognitive development in the area of drinking behaviors. A more recently normalized tool to evaluate cognitive development, might uncover a relationship between drinking and cognitive

development. It is also possible that other, unexplored factors including socio-economic status (SES), age at first drink, or identification with a sorority or fraternity, interacted with the relationships explored in this study and impacted results. The results of this study both support and contradict findings from prior research studies.

Since past studies primarily focused on the relationships between emotion regulation type and drinking behaviors concerning persons engaged in non-suicidal self-injury (NSSI), this study provided insight into college student emotion regulation style when NSSI was not an identifying factor. In light of this, the finding that expressive suppression was related to alcohol consumption is critical and supports research findings that have indicated that expressive suppression is associated with increased levels of alcohol use (Magar, et al., 2008) and contradicts those supporting a connection between cognitive reappraisal and increased drinking behaviors (Heilman, et al., 2010; Sokol-Hessner, et al., 2009; Yurtsever, 2008). Researchers should continue to explore the connection between alcohol use and emotion regulation to discover what factors are related to, or might impact the finding in this study. Another variable, age was found to have a positive, significant relationship with cognitive development which was consistent with past findings (Kramer, et al., 1992). Age was also found to be negatively related to the use of expressive suppression. Further, expressive suppression was related to drinking behaviors. Taken together, these findings raise an important question. Though researchers have found two distinct emotion regulation styles, no found studies have evaluated factors that influence their use. Findings from this study indicate that age may play a role in the use of expressive suppression, which warrants further investigation due to the relationship between expressive suppression and drinking behaviors. Further research is needed to explore this relationship. Some findings in the current research contradicted those by past researchers. A relationship was neither found between gender and drinking, nor drinking and education. This contradiction with past research may be due to problems with the sample including poor gender and education variability among participants. The varied natures of the findings in this study build upon the existing literature.

The collection of variables did not predict college student alcohol consumption; therefore, it may not be helpful to continue to evaluate these factors. This is important, because if not for this study, another researcher may have attempted to explore a potential relationship between cognitive development and drinking behaviors in college students. Specifically, as cognitive development was not found to be related to alcohol use, but was related to age and education, it is likely that other individual or group factors impact alcohol use behaviors. Cognitive development as used in this study may be too broad of a topic to attempt to measure the complexities involved with drinking behavior. The finding from this study that is of most importance to the field of college alcohol use behaviors is the discovery of a relationship between expressive suppression and drinking behaviors. This finding has important implications for current theories of college student alcohol use.

Some current areas of research into college student drinking behaviors include parenting differences, personal attitudes and perceived norms and peer behavior (Abar, 2012; Neighbors, Lindgren, Knee, Fossos, & DiBello, 2011; Varela & Pritchard, 2011). Finding a relationship between expressive suppression and alcohol may improve understanding of the current previously mentioned research theories of college student alcohol use. Future research may include emotion regulation as a way to improve understanding about differences in drinking behaviors. Additionally, expressive suppression may have implications for the ways drinking behaviors are addressed in therapeutic settings, because motion regulation might be an area for therapeutic intervention. For example, using the ERQ or a clinical interview to evaluation emotion regulation style may assist clinicians in developing accurate conceptualizations of client presenting issues and problems. Furthermore, emotion regulation might act as a risk factor for drinking problems in college students. Future researchers should explore the relationship between emotion regulation and drinking with improved sampling procedures to determine whether factors that were not found to be related in this study such as gender, education level and age indeed have a connection.

Limitations

Some issues associated with this research project may have impacted findings. A portion of the data collected was from a Midwestern university. Variability in the sample of college participants was attempted by inviting college students from all over the United States to participate in this study by way of listserv invitation; however, data used for analysis may have been mostly taking from a Midwestern sample, thus affecting results. Beyond this, because participants were recruited via an email offer, a non-random, snowballing technique was used, which limits the generalizability of results. Data entry problems associated with the variable of age may also have limited the results of this study, as variability within age groups that were originally intended to be explored could not be evaluated. Concerning sample size, due to participant drop out, the sample was smaller than desired. In addition, there was little variability in factors such as drinking behaviors, level of education and gender, which also may have impacted results. Some areas found to be related to alcohol use behaviors, such as socio-economic status and age of first drink were not included in this study, but may have improved its findings. As mentioned previously, a large number of participants dropped out of the study while taking the SPBI, the measure for cognitive development, the thought and time required to complete this assessment might have limited the sample size and results of the study. Missing data sets that had to be removed from analysis also might have impacted findings and the generalizability of results. Finally another type of analysis, such as an ANOVA to determine differences in groups, versus the decision to explore and view variables as continuous, may have limited the findings of this study.

Future Directions

Utilizing a new college student population with greater variability than the current research, or a non student population might yield different results than those found in the present study. Beyond the factors explored in this study, the inclusion of SES and age at first drink to the current set of variables may provide information to better understand college student alcohol use.

Cognitive development measures that are updated and utilize a particular area of learning may have better applications to understand drinking behaviors of college students. Additionally, the cognitive development measure used in this study may not adequately measure the construct of cognitive development, and future research can be used to determine whether the current assessment is a useful tool to evaluate cognitive development levels. Future research to explore alcohol use behaviors should also include a more thorough assessment of drinking behaviors and not the screen used in this study. Beyond this, the question of whether or not this screen is helpful is raised as this population did not obtain much variability in scores by its usage.

Conclusion

The aims of the current study were to explore the area of college student drinking behaviors. The most important relationship uncovered by this study was the relationship between expressive suppression and alcohol consumption. Different reasons, such as sample characteristics and data entry problems may have influenced these results. The discovery of present and absent relationships and suggestions to future researchers raised as a result of this research have served to increase understanding of the factors related to alcohol use among college students. It is hoped that continued study of areas, such as emotion regulation will provide researchers and clinicians with tools to address the issue of college student drinking behaviors.

REFERENCES

Abar, C. C. (2012). Examining the relationship between parenting types and patterns of student alcohol-related behavior during the transition to college. *Psychology of Addictive Behaviors, 26*(1), 20-29.

Appelhans, B. M., & Luecken, L. J. (2006). Heart rate variability as an index of regulated emotional responding. *Review of General Psychology, 10*(3), 229-240.

Armeli, S., Conner, T. S., Cullum, J., & Tennen, H. (2010). A longitudinal analysis of drinking motives moderating the negative affect-drinking association among college students. *Psychology of Addictive Behaviors, 24*(1), 38-47.

Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *The Alcohol Use Disorders Identification Test: Guidelines for use in primary care* (2nd ed.). Geneva, Switzerland: World Health Organization Department of Mental Health and Substance Abuse.

Blume, A. W., Marlatt, G. A., & Schmaling, K. B. (2000). Executive cognitive function and heavy drinking behavior among college students. *Psychology of Addictive Behaviors, 14*(3), 299-302.

Brackett, M. A., Mayer, J. D., & Warner, R. M. (2004). Emotional intelligence and its relation to everyday behaviour. *Personality and Individual Differences, 36*(6), 1387-1402.

Abar, C. C. (2012). Examining the relationship between parenting types and patterns of student alcohol-related behavior during the transition to college. *Psychology of Addictive Behaviors, 26*(1), 20-29.

Appelhans, B. M., & Luecken, L. J. (2006). Heart rate variability as an index of regulated emotional responding. *Review of General Psychology, 10*(3), 229-240.

Armeli, S., Conner, T. S., Cullum, J., & Tennen, H. (2010). A longitudinal analysis of drinking motives moderating the negative affect-drinking association among college students. *Psychology of Addictive Behaviors, 24*(1), 38-47.

Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *The Alcohol Use Disorders Identification Test: Guidelines for use in primary care* (2nd ed.). Geneva, Switzerland: World Health Organization Department of Mental Health and Substance Abuse.

Blume, A. W., Marlatt, G. A., & Schmaling, K. B. (2000). Executive cognitive function and heavy drinking behavior among college students. *Psychology of Addictive Behaviors, 14*(3), 299-302.

Brackett, M. A., Mayer, J. D., & Warner, R. M. (2004). Emotional intelligence and its relation to everyday behaviour. *Personality and Individual Differences, 36*(6), 1387-1402.

Brotchie, J., Hanes, J., Wendon, P., & Waller, G. (2007). Emotional avoidance among alcohol and opiate abusers: The role of schema-level cognitive processes. *Behavioural and Cognitive Psychotherapy, 35*(2), 231-236.

Capraro, R. L. (2000). Why College Men Drink: Alcohol, Adventure, and the Paradox of Masculinity. [Article]. *Journal of American College Health, 48*(6), 307.

Carton, S., Bayard, S., Paget, V., Jouanne, C., Varescon, I., Edel, Y., et al. (2010). Emotional awareness in substance-dependent patients. *Journal of Clinical Psychology, 66*(6), 599-610.

Crowell, S. E., Beauchaine, T. P., McCauley, E., Smith, C. J., Stevens, A. L., & Sylvers, P. (2005). Psychological, autonomic, and serotonergic correlates of parasuicide among adolescent girls. *Development and Psychopathology, 17*(04), 1105-1127.

Curtin, J. J., Patrick, C. J., Lang, A. R., Cacioppo, J. T., & Birbaumer, N. (2001). Alcohol Affects Emotion Through Cognition. [Article]. *Psychological Science (Wiley-Blackwell), 12*(6), 527.

Davis, K. C., Norris, J., Hessler, D. M., Zawacki, T., Morrison, D. M., & George, W. H. (2010). College Women's Sexual Decision Making: Cognitive Mediation of Alcohol Expectancy Effects. [Article]. *Journal of American College Health, 58*(5), 481-489.

Dawson, D. A., Grant, B. F., Stinson, F. S., & Chou, P. S. (2004). Another Look at Heavy Episodic Drinking and Alcohol Use Disorders among College and Noncollege Youth. [Article]. *Journal of Studies on Alcohol, 65*(4), 477-488.

de Castro, J. M. (1990). Social, circadian, nutritional, and subjective correlates of the spontaneous pattern of moderate alcohol intake of normal humans. *Pharmacology, Biochemistry and Behavior, 35*(4), 923-931.

Delgado, M. R., Gillis, M. M., & Phelps, E. A. (2008). Regulating the expectation of reward via cognitive strategies. [Article]. *Nature Neuroscience, 11*(8), 880-881.

Farris, S. R., Ostafin, B. D., & Palfai, T. P. (2010). Distractibility moderates the relation between automatic alcohol motivation and drinking behavior. *Psychology of Addictive Behaviors, 24*(1), 151-156.

Grant, B. F., Dawson, D. A., Stinson, F. S., Chou, S. P., Dufour, M. C., & Pickering, R. P. (2006). The 12-Month Prevalence and Trends in DSM -- IV Alcohol Abuse and Dependence. [Article]. *Alcohol Research & Health, 29*(2), 79-91.

Groeschel, B. L., Wester, S. R., & Sedivy, S. K. (2010). Gender role conflict, alcohol, and help seeking among college men. *Psychology of Men & Masculinity, 11*(2), 123-139.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348-362.

Harrell, Z. A. T., & Karim, N. M. (2008). Is gender relevant only for problem alcohol behaviors? An examination of correlates of alcohol use among college students. [Article]. *Addictive Behaviors, 33*(2), 359-365.

Hasking, P., Momeni, R., Swannell, S., & Chia, S. (2008). The Nature and Extent of Non-Suicidal Self-Injury in a Non-Clinical Sample of Young Adults. *Archives of Suicide Research, 12*(3), 208 - 218.

Heilman, R. M., Crişan, L. G., Houser, D., Miclea, M., & Miu, A. C. (2010). Emotion regulation and decision making under risk and uncertainty. *Emotion, 10*(2), 257-265.

Hingson, R. W., Heeren, T., Zakocs, R. C., Kopstein, A., & Wechsler, H. (2002). Magnitude of Alcohol-Related Mortality and Morbidity among U.S. College Students Ages 18-24. [Article]. *Journal of Studies on Alcohol, 63*(2), 136.

John, O. P., & Gross, J. J. (2004). Healthy and Unhealthy Emotion Regulation: Personality Processes, Individual Differences, and Life Span Development. [Article]. *Journal of Personality, 72*(6), 1301-1334.

Kramer, D. A., Kahlbaugh, P. E., & Goldston, R. B. (1992). A measure of paradigm beliefs about the social world. *Journals of Gerontology, 47*(3), P180-P189.

Leith, K. P., & Baumeister, R. F. (1996). Why do bad moods increase self-defeating behavior? Emotion, risk tasking, and self-regulation. *Journal of Personality and Social Psychology, 71*(6), 1250-1267.

Lindman, R. E., & Sjoholm, B. A. (2000). Expectations of Alcohol-Induced Positive Affect: A Cross-Cultural Comparison. [Article]. *Journal of Studies on Alcohol, 61*(5), 681.

Magar, E. C. E., Phillips, L. H., & Hosie, J. A. (2008). Self-regulation and risk-taking. *Personality and Individual Differences, 45*(2), 153-159.

Neighbors, C., Lindgren, K. P., Knee, C. R., 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.

Nelson, T. F., Xuan, Z., Lee, H., Weitzman, E. R., & Wechsler, H. (2009). Persistence of heavy drinking and ensuing consequences at heavy drinking colleges. *Journal of Studies on Alcohol and Drugs, 70*(5), 726-734.

O'Malley, P. M., & Johnston, L. D. (2002). Epidemiology of Alcohol and Other Drug Use among American College Students. [Article]. *Journal of Studies on Alcohol. Supplement, 63*, 23.

Osberg, T. M., Atkins, L., Buchholz, L., Shirshova, V., Swiantek, A., Whitley, J., et al. (2010). Development and validation of the College Life Alcohol Salience Scale: A measure of beliefs about the role of alcohol in college life. *Psychology of Addictive Behaviors, 24*(1), 1-12.

Perry, W. G., Jr. (1970). *Forms of intellectual and ethical development in the college years*. Oxford England: Holt, Rinehart & Winston.

Reinert, D. F., & Allen, J. P. (2007). The Alcohol Use Disorders Identification Test: An Update of Research Findings. [Article]. *Alcoholism: Clinical & Experimental Research, 31*(2), 185-199.

Roper, L., Dickson, J., Tinwell, C., Booth, P., & McGuire, J. (2010). Maladaptive Cognitive Schemas in Alcohol Dependence: Changes Associated with a Brief Residential Abstinence Program. *Cognitive Therapy and Research, 34*(3), 207-215.

Rubin, A., Migneault, J. P., Marks, L., Goldstein, E., Ludena, K., & Friedman, R. H. (2006). Automated Telephone Screening for Problem Drinking. [Article]. *Journal of Studies on Alcohol, 67*(3), 454-457.

Schnur, R. E., & MacDonald, M. L. (1988). Stages of identity development and problem drinking in college women. *Journal of Youth and Adolescence, 17*(4), 349-369.

Serras, A., Saules, K. K., Cranford, J. A., & Eisenberg, D. (2010). Self-injury, substance use, and associated risk factors in a multi-campus probability sample of college students. *Psychology of Addictive Behaviors, 24*(1), 119-128.

Shamloo, Z. S., & Cox, W. M. (2010). The relationship between motivational structure, sense of control, intrinsic motivation and university students' alcohol consumption. [Article]. *Addictive Behaviors, 35*(2), 140-146.

Sher, K. J. (1997). Psychological Characteristics of Children of Alcoholics. [Article]. *Alcohol Health & Research World, 21*(3), 247.

Sher, K. J., Bartholow, B. D., Peuser, K., Erickson, D. J., & Wood, M. D. (2007). Stress-response-dampening effects of alcohol: Attention as a mediator and moderator. *Journal of Abnormal Psychology, 116*(2), 362-377.

Simons, L., Lantz, V., Klichine, S., & Ascolese, L. (2005). Drinking Games, Binge Drinking and Risky Sexual Behaviors among College Students (Vol. 49, pp. 23-36): American Alcohol & Drug Information Foundation.

Sokol-Hessner, P., Hsu, M., Curley, N. G., Delgado, M. R., Camerer, C. F., & Phelps, E. A. (2009). Thinking like a trader selectively reduces individuals' loss aversion. *Proceedings of the National Academy of Sciences, 106*(13), 5035-5040.

Spada, M. M., Caselli, G., & Wells, A. (2009). Metacognitions as a predictor of drinking status and level of alcohol use following CBT in problem drinkers: A prospective study. [Article]. *Behaviour Research & Therapy, 47*(10), 882-886.

Spada, M. M., Moneta, G. B., & Wells, A. (2007). The relative contribution of metacognitive beliefs and expectancies to drinking behaviour. *Alcohol Alcohol., 42*(6), 567-574.

Spada, M. M., & Wells, A. (2005). Metacognitions, emotion and alcohol use. [Article]. *Clinical Psychology & Psychotherapy, 12*(2), 150-155.

Steele, C. M., & Josephs, R. A. (1990). Alcohol myopia: Its prized and dangerous effects. *American Psychologist, 45*(8), 921-933.

Trinidad, D. R., & Johnson, C. A. (2002). The association between emotional intelligence and early adolescent tobacco and alcohol use. *Personality and Individual Differences, 32*(1), 95-105.

Udo, T., Bates, M. E., Mun, E. Y., Vaschillo, E. G., Vaschillo, B., Lehrer, P., et al. (2009). Gender differences in acute alcohol effects on self-regulation of arousal in response to emotional and alcohol-related picture cues. *Psychology of Addictive Behaviors, 23*(2), 196-204.

Varela, A., & Pritchard, M. E. (2011). Peer Influence: Use of Alcohol, Tobacco, and Prescription Medications. [Article]. *Journal of American College Health, 59*(8), 751-756.

Velleman, R. (1992). Intergenerational effects: A review of environmentally oriented studies concerning the relationship between parental alcohol problems and family disharmony in the genesis of alcohol and other problems: I. The intergenerational effects of alcohol problems. *International Journal of the Addictions, 27*(3), 253-280.

Wang, M., Liu, S., Zhan, Y., & Shi, J. (2010). Daily work–family conflict and alcohol use: Testing the cross-level moderation effects of peer drinking norms and social support. *Journal of Applied Psychology, 95*(2), 377-386.

Wells, A. (2000). *Emotional disorders and metacognition: Innovative cognitive therapy*. New York, NY US: John Wiley & Sons Ltd.

Williams, F., & Hasking, P. (2010). Emotion Regulation, Coping and Alcohol Use as Moderators in the Relationship Between Non-Suicidal Self-Injury and Psychological Distress. *Prevention Science, 11*(1), 33-41.

Williams, R. J., & Ricciardelli, L. A. (1999). Gender Congruence in Confirmatory and Compensatory Drinking. [Article]. *Journal of Psychology, 133*(3), 323.

Yurtsever, G. (2004). Emotional regulation strategies and negotiation. [Article]. *Psychological Reports, 95*(3), 780-786.

Yurtsever, G. (2008). Negotiators' profit predicted by cognitive reappraisal, suppression of emotions, misrepresentation of information, and tolerance of ambiguity. *Perceptual and Motor Skills, 106*(2), 590-608.

APPENDICES

APPENDIX A

Oklahoma State University Institutional Review Board

Date:	Wednesday, May 25, 2011
IRB Application No	ED11112
Proposal Title:	Cognition, Emotion Regulation and Alcohol Consumption in College Students
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 5/24/2012

Principal Investigator(s):

Shereen Traylor
4100 W. 19th #D110
Stillwater, OK 74074

Donald Boswell
406 Willard
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

APPENDIX B

Consent Form
(Non-Education participants)

To Whom It May Concern:

You are being invited to participate in a research project that is designed to investigate progression factors that contribute to emotion management and social behaviors in college/graduate/professional students. This dissertation is being conducted by Shereen L. Traylor, a Counseling Psychology Doctoral Candidate, under the direction of Dr. Donald Boswell in the Department of Applied Health and Educational Psychology at Oklahoma State University. For the purpose of this study, a variety of individual progression factors, social behaviors, and self-monitoring techniques factors are explored. This study serves as my doctoral dissertation.

In order to participate in this study, you must be considered an undergraduate, graduate or professional school student, in the process of obtaining a degree. If these criteria do not apply to you, please disregard this email.

If you decide to participate, you will be asked to complete a variety of research-related questionnaires. We anticipate that the questionnaires will take you approximately 45 minutes to complete. Some questions will ask for demographic information about you; other questions will ask about social behaviors, self-monitoring techniques and individual progression factors. Please do your best to respond to all the questions presented.

Due to the importance of exploring the relationship between individual progression factors, social behaviors and self-monitoring techniques, this type of study is important. Despite this, we do not anticipate any immediate or direct benefits to you. The time dedicated to completing this study is likely to be the only inconvenience to you. In the event that some unforeseen distress is experienced in the course of this study, contact information is provided at the conclusion of this informed consent document.

Your participation in this study is voluntary. You may refuse to participate or withdraw your consent to this research and discontinue your participation at any time without prejudice or penalty.

Know that none of the questionnaires will ask for specific identifying information about you. Survey Monkey will be used for maintaining surveys and confidentiality. Those choosing to participate will receive a unique link to participate in the research. The unique link will not be known to the researcher, ensuring that responses are anonymous.

Electronic data concerning this study will be maintained on the principal investigator's password-protected personal mass storage device for a minimum of 7 years. Information collected in this study may be reported in future publications.

In closing, participation will involve the completion of research-related questionnaires. If you choose to not participate in this study, simply delete this email. If you decide to participate,

please provide your assent, and complete the questionnaires provided, submitting them when you are finished. Please feel free to print a copy of this form for your reference. Completing the surveys indicates your consent for the use of your supplied answers. If you have any questions or concerns related to this study, please contact Shereen Traylor (shereen.traylor@okstate.edu), or Dr. Donald Boswell (don.boswell@okstate.edu). If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

By clicking here and completing the survey, you are giving consent to participate.

Sincerely,
Shereen Traylor, M.S.
Counseling Psychology Doctoral Candidate
411 Willard
Stillwater, OK 74078

Donald Boswell, Ph.D.
Associate Professor
406 Willard
Stillwater, OK 74078

APPENDIX C

Consent Form
(SONA Students)

To Whom It May Concern:

You are being invited to participate in a research project that is designed to investigate progression factors that contribute to emotion management and social behaviors in college/graduate/professional students. This dissertation is being conducted by Shereen L. Traylor, a Counseling Psychology Doctoral Candidate, under the direction of Dr. Donald Boswell in the Department of Applied Health and Educational Psychology at Oklahoma State University. For the purpose of this study, a variety of individual progression factors, social behaviors, and self-monitoring techniques factors are explored. This study serves as my doctoral dissertation.

In order to participate in this study, you must be considered an undergraduate, graduate or professional school student, in the process of obtaining a degree. If these criteria do not apply to you, please disregard this email.

If you decide to participate, you will be asked to complete a variety of research-related questionnaires. We anticipate that the questionnaires will take you approximately 45 minutes to complete. Some questions will ask for demographic information about you; other questions will ask about social behaviors, self-monitoring techniques and individual progression factors. Please do your best to respond to all the questions presented.

Due to the importance of exploring the relationship between individual progression factors, social behaviors and self-monitoring techniques, this type of study is important. Despite this, we do not anticipate any immediate or direct benefits to you. The time dedicated to completing this study is likely to be the only inconvenience to you. In the event that some unforeseen distress is experienced in the course of this study, contact information is provided at the conclusion of this informed consent document.

Your participation in this study is voluntary. You may refuse to participate or withdraw your consent to this research and discontinue your participation at any time without prejudice or penalty. You will receive one point of extra credit at the conclusion of the questionnaires.

Know that none of the questionnaires will ask for specific identifying information about you. Survey Monkey will be used for maintaining surveys and confidentiality. Those choosing to participate will receive a unique link to participate in the research. The unique link will not be known to the researcher, ensuring that responses are anonymous.

Electronic data concerning this study will be maintained on the principal investigator's password-protected personal mass storage device for a minimum of 7 years. Information collected in this study may be reported in future publications.

In closing, participation will involve the completion of research-related questionnaires. If you choose to not participate in this study, simply delete this email. If you decide to participate, please provide your assent, and complete the questionnaires provided, submitting them when you

are finished. Please feel free to print a copy of this form for your reference. Completing the surveys indicates your consent for the use of your supplied answers. If you have any questions or concerns related to this study, please contact Shereen Traylor (shereen.traylor@okstate.edu), or Dr. Donald Boswell (don.boswell@okstate.edu). If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

By clicking here and completing the survey, you are giving consent to participate.

Sincerely,
Shereen Traylor, M.S.
Counseling Psychology Doctoral Candidate
411 Willard
Stillwater, OK 74078

Donald Boswell, Ph.D.
Associate Professor
406 Willard
Stillwater, OK 74078

VITA

Shereen LaFaye Traylor

Candidate for the Degree of

Doctor of Philosophy

Thesis: COGNITION, EMOTION REGULATION AND ALCOHOL CONSUMPTION IN COLLEGE STUDENTS

Major Field: Educational Psychology, Specialization in Counseling Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma in July, 2012.

Completed the requirements for the Master of Science in Educational Psychology at Oklahoma State University, Stillwater, Oklahoma/U.S.A. in 2008.

Completed the requirements for the Bachelor of Science in Biology at Houston Baptist University, Houston, TX/U.S.A. in 2005.

Experience:

Department of Veteran Affairs **August 2011 – Present**
VA Eastern Kansas Healthcare System
Topeka VAMC
2200 S.W. Gage Boulevard
Topeka Kansas 66612
Position: Psychology Intern

Oklahoma Office of Juvenile Affairs **August 2010 – July 2011**
13323 West Highway 51
Sand Springs, OK 74063
Position: Executive Fellow

Professional Memberships: APA Divisions: 17, 18, 43

Name: Shereen LaFaye Traylor Date of Degree: July, 2012

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: COGNITION, EMOTION REGULATION AND ALCOHOL CONSUMPTION IN COLLEGE STUDENTS

Pages in Study: 56 Candidate for the Degree of Doctor of Philosophy

Major Field: Educational Psychology

Scope and Method of Study: The aim of this study was to determine whether three factors, cognitive development (defined by this study as the way individuals understand social paradigms), style of emotion regulation and other demographic characteristics were able to predict alcohol consumption. The sample included 102 (80 female and 22 male) college students currently enrolled in undergraduate, graduate or professional school programs.

Findings and Conclusions: Findings indicated that the explored factors of cognitive development, emotion regulation, and other demographic features were not useful predictors of alcohol consumption. A significant relationship was found between alcohol consumption and the emotion regulation type of expressive suppression. Due to limitations with sample variability and size, sampling techniques, and data entry problems, further research is needed to explore the relationship uncovered between suppressing emotions and the consumption of larger amounts of alcohol among college students.

ADVISER'S APPROVAL: Donald Boswell, Ph.D.