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The Impact of Alcohol- Related Consequences on Alcohol Use Behaviors

Amy Cuccuro

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THE IMPACT OF ALCOHOL-RELATED CONSEQUENCES ON ALCOHOL USE BEHAVIORS

by
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for the degree

Doctor of Psychology

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ALCOHOL- RELATED CONSEQUENCES ON ALCOHOL USE BEHAVIORS

We the undersigned committee, having examined the attached doctoral research project, "The Impact of Alcohol- Related Consequences on Alcohol Use Behaviors" by Amy Cuccuro, M.S. hereby indicates its unanimous approval.

_____

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Abstract

Title: The Impact of Alcohol- Related Consequences on Alcohol Use Behaviors

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Major Advisor: Patrick Aragon, Psy.D.

Objectives: Primary objectives of the present study include (1) exploring the impact of alcohol-related consequences on current drinking behaviors, and (2) examining perceptions of consequences and their relationship to current drinking behaviors.

Method: Original data collected through online self-report surveys from 579 participants (M_{age} = 28.0 years) was utilized for the present study. Each participant answered brief questionnaire about their current alcohol use (quantity and frequency) using the AUDIT (Alcohol Use Disorders Identification Test) and follow up questions about their prior alcohol related experiences and subsequent perceptions.

Results: There was a significant association between AUDIT scores and prior experiences of alcohol-related consequences $\chi_2(2) = 135.7$, $p < .01$. A significant association between AUDIT scores and severity ratings of prior alcohol related consequences, $\chi_2(2) = 12.6$, $p < .01$ was also present. The association between AUDIT scores and prior experiences of alcohol-related consequences was maintained for non-college, $\chi_2(2) = 79.56$, $p < .01$, and the total sample, $\chi_2(2) = 80.49$, $p < .01$. An association was not demonstrated for those currently enrolled in college, $\chi_2(2) = 3.02$, $p = .389$. In regard to the potential effect of age on the major associations demonstrated by this study, the results indicated that the association between AUDIT scores and prior experiences of alcohol related consequences was the same for both age groups (e.g., ages 18-25 and ages

26-65), $\chi_2(2) = 85.96$, $p < .01$ (ages 18-25), $\chi_2(2) = 55.24$, $p < .01$ (ages 26-65). With regard to severity ratings, there was a significant association between AUDIT scores and severity ratings existed amongst individuals ages 18-25, $\chi_2(2) = 10.35$, $p < .01$, while the same association did not exist for the 26-65 age group, $\chi_2(2) = 4.78$, $p = .091$.

Conclusions: The results suggest that people will continue to drink despite negative or punishing consequences relating to their drinking patterns. The results also indicate that people who view alcohol-related consequences to be less severe will demonstrate more harmful current patterns of alcohol consumption, which aligns with the Social Learning Theory tenants of alcohol use. Analyses regarding college status enrollment indicate a need for future research to examine potential differences in drinking behaviors between college students and their age-matched peers who are not currently enrolled. The analyses of age suggest that age, and perhaps life experience and maturity, affect perceptions of aversive drinking occurrences.

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Introduction

Alcohol use is one of the most pervasively misused substances on college campuses in the United States (Perkins, 2002). Evidence of this prevalence has been routinely cited by researchers, university administrations, and students alike (Anderson & Santos, 2015; Perkins, 2002 Substance Abuse and Mental Health Services Administration, 2014). The current statistics from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) suggested that drinking by college students (ages 18 to 24) contributes to approximately 1,519 student deaths each year (Hingson, Zha, & Smyth, 2017). Research has also determined that college students drink more and are at a greater risk for alcohol-related problems than their non-college attending, same-aged peers (Carter, Brandon, & Goldman, 2010). Such findings have provoked widespread efforts among researchers, prevention professionals, and university administrations toward the cultivation and utilization of productive, evidence-informed approaches to address these issues. Despite these efforts, rates of alcohol misuse and accompanying consequences among this high-risk population have remained consistent for at least two decades (Johnston, O'Malley, Bachman, & Schulenberg, 2013).

Prior research has examined college drinking trends and has introduced the importance of cognitions about drinking and their influence on subsequent drinking behaviors. These cognitions, such as subjective expectancies and interpretations, are central influences on an individual's behaviors (Barnett, Merrill, Kahler, Colby, 2015; Merrill, Read, & Barnett, 2013). It is equally relevant to understand subjective aspects of

why students drink and how they perceive drinking, because these judgements have shown to affect student's subsequent patterns of alcohol use (Klein, 1992).

There are three major goals of this research study. First, the study will examine the role of prior experiences of alcohol-related consequences on current alcohol use and misuse behaviors. The second aim is to determine whether or not judgements of alcohol-related consequences have an effect on current alcohol use behaviors. Finally, the study will examine individual factors, such as age and college enrollment status, and their relationship to both occurrences of and attitudes about alcohol-related consequences.

Review of the Literature

Alcohol Misuse

The National Institute on Alcohol Abuse and Alcoholism (2007) defines alcohol misuse as: "alcohol consumption that puts individuals at an increased risk for health and social consequences." Similarly, the Center for Disease Control (CDC) Alcohol Team (2016) defines misuse as, "a pattern of drinking that results in harm to one's health, interpersonal relationships, or ability to work." For the purposes of this study, the term *alcohol misuse* will be utilized to encompass a wide range of current descriptors that define problematic alcohol use as the most common amongst emerging adults, including *binge drinking, heavy drinking, alcohol abuse,* and *excessive drinking*. It is important to note that there is increased recognition that alcohol misuse is best represented by a spectrum of relevant behavioral and cognitive patterns. For example, *alcohol dependence* is often

acknowledged as one end of the spectrum that constitutes alcohol misuse while *moderate drinking* is often viewed as the opposite end of the spectrum (National Institute on Alcohol Abuse and Alcoholism, 2008). Moderate drinking is defined as 1 drink per day for women and up to 2 drinks per day for men (UHS & USDA, 2015). According to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, symptoms of *alcohol dependence*, such as cravings, withdrawals, and tolerance for increased amounts of alcohol may be indicative of an Alcohol Use Disorder diagnosis (American Psychiatric Association, 2013). Problematic patterns of *alcohol abuse,* such as recurrent alcohol use in physically hazardous situations or failure to fulfill work or school obligations, may also manifest as symptoms of Alcohol Use Disorder (American Psychiatric Association, 2013). *Excessive drinking*, which includes binge drinking (4 drinks or more per single occasion for women; 5 or more drinks per single occasion for men) and heavy drinking (8 or more drinks per week for women; 15 or more drinks per week for men) are also considered to be alcohol misuse (CDC, 2018).

Binge Drinking

The Center for Disease Control has labeled binge drinking as a serious health problem. This designation as a public health problem has propelled major alcohol-related public health objectives and initiatives to prevent and reduce binge drinking in the United States (CDC, 2018). However, binge drinking remains highly common despite prevention and research efforts. Binge drinking is associated with many health problems, including unintentional injury (e.g., car crashes, falls, burns, alcohol poisoning), violence (e.g.,

homicide, suicide, intimate partner violence, and sexual assault), sexually transmitted diseases, unintended pregnancy and poor pregnancy outcomes (i.e., stillbirth or miscarriage; Naimi, Lipscomb, Brewer & Colley, 2015). It has also been associated with chronic diseases (e.g., heart disease, high blood pressure, and liver disease) as well as cancer, memory and learning problems, and alcohol dependence (World Health Organization, 2014).

Esser, Hedden, Kanny, Brewer, Gfroerer and Naimi (2014) analyzed a nationally representative sample of 138,000 adults who responded to The National Survey on Drug Use and Health (NSDUH) survey series in 2009, 2010, and 2011. Their results indicated that binge drinking was most common among individuals with annual family incomes of $75,000 or greater, whereas alcohol dependence was most common among those with annual family incomes amounting to less than $25,000 (Esser et. al., 2014). Additionally, a positive relationship was established between alcohol dependence and binge drinking frequency. Whereas binge drinkers are at a higher risk than non-binge drinkers for alcohol dependence, most people who binge drink do not meet criteria for an alcohol use disorder (AUD; Dawson, 2000). Therefore, much of this literature review accounts for this subclinical population that is affected by risky or excessive alcohol use, but may not fully meet criteria for an alcohol use disorder. Kanny, Naimi, Liu, Lu & Brewer (2015) analyzed data from the 2015 Behavioral Risk Factor Surveillance System survey (N= 408,800), to examine total binge drinking rates, including prevalence, frequency, and

intensity among U.S adults. Their analysis revealed that binge drinking was most common amongst young adults ages 18-34 (Kanny, Naimi, Liu, Lu & Brewer, 2015).

Prevalence of Alcohol Misuse among Young Adults

According to the Substance Abuse Mental Health Services Administration (SAMHSA) 2015 National Survey on Drug Use and Health, 58.3 percent, or approximately 20.4 million young adults (ages 18 through 25) were identified as current alcohol users. Esser et al. (2014) analyzed The National Survey on Drug Use and Health and revealed that excessive drinking, binge drinking, and alcohol dependence were most common among men and individuals ages 18 to 24. The results from the most recent results of the National Survey on Drug use and Health (N=68,032) demonstrated that people aged 18-25 reported higher rates of binge drinking and heavy drinking (within the past month) than individuals above age 26 (SAHMSA, 2017).

Within the cohort of individuals between ages 18 and 24, numerous studies have shown that college students tend to drink more than their age-matched, noncollege peers (Carter, Brandon & Goldman 2010). Carter, Brandon and Goldman (2010) reviewed 18 studies to compare drinking behavior among college students with that of nonstudents. Nearly all the studies demonstrated evidence that college students drink larger quantities, and drink more frequently in general. College students across studies also tended to be at an increased risk for alcohol related problems, such as alcohol dependence and alcohol abuse (Carter, Brandon, and Goldman, 2010).

Contextual Influences on College Alcohol Behaviors

College-specific factors, such as the presence of Greek life, athletic team membership, dormitory residence, current age, age of drinking onset, and parental factors are additional factors necessary for consideration when examining and comparing drinking behaviors among college students with that of their age-matched non-student peers. Presley, Meilman, and Leichliter (2002) conducted a literature review to examine institutional and environmental factors that relate to high-risk drinking patterns of college students. Their review proposed that there are various factors that have an effect on college drinking, which included: (1) organizational property variables of campus, including affiliations (e.g., women's institutions, historically black institutions); (2) presence of a Greek system or athletics teams, and (3) a 2- or 4- year status designation. Physical and behavioral properties of the campus (e.g., residence types, institution size) and campus community property variables (e.g., pricing, availability, outlet density) were additional factors that have been shown to relate to drinking behaviors (Presley, Meilman, & Leichliter, 2002). In fact, the presence of such variables are more likely to be related to variations in drinking outcomes than college enrollment itself (Carter, Brandon, & Goldman, 2010).

College Status

When making comparisons between non-college students and their college-attending peers, a conceptualized definition of college status with a set of criteria must be utilized in order to assign the sample into a discrete group that permits comparisons in

drinking behavior. Carter, Brandon, and Goldman's (2010) metanalysis demonstrated that college status is defined with relative consistency. That is, the criterion across studies, with "current enrollment in college" as the basic qualifying prerequisite for comparison amongst individuals within this target demographic. However, it is essential to consider other specifications that may cause variations in the typical definition of college status, such as part time enrollment, type of college (2 year and 4 year), and student age range (Carter, Brandon, & Goldman, 2010).

Several studies have established notable differences in prevalence of alcohol-related behaviors among two-year and four-year colleges. For example, Velazquez, Pasch, Laska, Lust, Story, and Ehlinger (2011) examined responses of the 2010 College Student Health Survey (N=13,700) to compare prevalence of alcohol use behaviors amongst two-year and four-year colleges. The survey examined multiple factors, including past year alcohol use, past month alcohol use, binge drinking over the past two weeks, average calculated blood alcohol level, and average number of alcohol-related consequences. Their analysis concluded that students who were attending four-year colleges, were more likely to report past year alcohol use, past month alcohol use, and binge drinking behaviors. Additionally, four-year college students had a higher average blood alcohol content as well as a larger number of reported alcohol-related consequences than students who were attending two-year. These results were further exacerbated among male respondents. Nonetheless, despite these discrepancies between college-program type, the prevalence of alcohol misuse remains problematic among

college students attending both two and four year colleges, making research and intervention relevant regardless of institution type (Velazquez et al., 2011).

Dormitory Residence

The young adult's living environment (e.g., off-campus, dormitory, with parents) has shown to play a substantial role in college student drinking and alcohol related behaviors. For example, a representative study (N=2,000) of college students aged 18-25 in New York demonstrated that living in a dormitory instead of at home with one's parents or similar off-campus arrangement, was associated with significantly higher levels of alcohol use and alcohol-related consequences (Barnes, 1992). Another study by O'Hare (1990; N=606), revealed that commuters (i.e., students living at home with parents), were more likely to drink less than students who lived on campus. A more recent study by Benz et al. (2017;N=3694) revealed that students living off-campus without parents reported more frequent alcohol consumption, greater drinking quantities, more frequent heavy drinking, and a larger number of alcohol-related consequences than students living on-campus. Further, students living off-campus with their parents demonstrated significantly fewer risky drinking behaviors than students who lived on-campus (Benz et al., 2017). On the other hand, living on campus has shown to contribute to potential protective factors for students, too. For example, students who live on campus may have a decreased need to rely on themselves or friends for transportation to social events. This ability to walk or use school transportation could decrease incidences of drinking and driving. In fact, one study that examined drinking and driving found that

living in on-campus dorms was associated with less drinking and driving over time (Quinn & Fromme, 2012). Overall, however, it has appeared that the college-living environment without parents, both on and off campus, either independently or with peers, is a risk factor for heavy drinking and potential adverse consequences (Benz et. al, 2017).

Greek Life and Athletic Team Membership

There is general consensus among the literature that members of sororities and fraternities are more likely than other college students to engage in high-risk drinking and to experience related consequences (Alva, 1998; Borsari & Carey, 1999; Caron, Moskey, & Hovey, 2004; Cashin, Presley, & Meilman, 1998; McCabe et al., 2005; Meilman, Leichliter, & Presley, 1999; Presley et al., 2002; Weschler, Kuh, & Davenport, 1996). One longitudinal study by McCabe and colleagues (2005) examined patterns of substance abuse in relation to membership in fraternities and sororities amongst 5883 undergraduate students revealed that active members of fraternities and sororities had higher levels of heavy episodic drinking. These members are also prone to experiencing more negative consequences of alcohol use; such as unplanned sexual activity and academic problems (Cashin, Presley, & Meilman, 1998). These problematic patterns of drinking amongst these students is likely due to the norms, attitudes, and expectations that are engrained in the culture of Greek Life. The socialization processes of members, alongside perception biases regarding the actual frequency and quantity of alcohol consumption by one's peers, likely perpetuate and maintain drinking behaviors amongst this social group (Danielson, Taylor, & Hartford, 2001). Related social processes may be in play when

considering alcohol use amongst student athletes, another subgroup that has been identified as at-risk for alcohol misuse associated consequences (Perkins & Craig, 2012). According to the National Collegiate Athletic Association's study of substance use trends among national NCAA college student-athletes, 49% of student-athletes engage in heavy, episodic drinking once or more within a two-week period (NCAA, 2014). It is theorized that social norms and social expectancies may be underlying student-athlete's motivations to misuse alcohol (Lewis, Milroy, Wyrick, Hebard, & Lamberson, 2017)

Gender Differences

Literature over the past 20 years has consistently demonstrated that women consume less alcohol then men and experience fewer drinking-related social problems than men (Keys, Li, & Hasin, 2011; Nolen-Hoeksema, 2004; Wilsnack, Wilsnack, Kristjanson, et al., 2009). Among college students, male college students have been shown to drink more frequently and in greater quantities in comparison to female college students (Clements, 1999; O'Malley & Johnston, 2002; Read, Wood & Davidoff, 2002). However, more recent data, as well as longitudinal evidence, revealed that females appear to be closing the gender gap associated with problematic alcohol use, and college women's drinking rates are converging with those of college men (ACHA, 2011; Johnston, O'Malley, Bachman, Schulenburg, & Miech, 2014). Further, it has been observed that females are initiating alcohol use earlier, and increasing binge drinking. Interestingly, these patterns among men have remained steady over several decades (Amaro, Blake, & Schwartz, 2001; Johnston, O'Malley, & Bachman, 1999; Keyes,

Grant, & Hasin, 2008; Keyes, Martins, Blanco, & Hasin, 2010; SAMSHA, 2014) However, empirical literature is sparse in regards to recent increases in female drinking rates, and specifically what factors may be contributing to the incline (Likis-Werle & Borders, 2017). Consequently, collegiate women have been identified as a subgroup deemed as a critical focus for future alcohol research (NIAA, 2007; Smith & Weisner, 2000).

Cognitions and motivations in regards to drinking behaviors appear to differ between the sexes. For example, several studies have suggested that motivations for drinking amongst college men include achieving positive enhancement, adhering to masculine social norms, and asserting power (Capraro, 2000; Lewis & Neighbors, 2004). Gender differences may come to be relevant to patterns of heavy alcohol use and binge drinking, as well. Dir, Bell, Adams, and Hulvershorn (2017) conducted a literature review (N=38) of peer-reviewed publications on binge drinking in adolescent and emerging adults. Their review suggested that females and males may binge drink or misuse alcohol due to neurobiological changes that are unique to each sex. Particularly, males may binge drink due to higher levels of sensation seeking and lower inhibitory control, while females might binge drink due to heightened stress reactivity and vulnerability to internalizing symptoms (Shulman, Harden, Chein, & Steinberg, 2015; Nolen-Hoeksema, 2004; Bangasser & Valentino, 2014; Dir, Bell, Adams & Hulvershorn, 2017). Due to these differences and others, it is hypothesized that there are separate,

unique social, cognitive, and environmental factors that affect patterns of female alcohol use (Likis-Werle & Borders, 2017).

Age

Growing data that focuses on lifetime patterns of alcohol consumption in the United States have shown strong evidence that drinking escalates expeditiously during late teen years and eventually peaks during young adulthood (ages 18-24; Dawson et. al., 2004; Fillmore, Hartka & Johnstone, 1991; Naimi et al., 2003; NIH, 2006). In Carter, Brandon, and Goldman's (2010) literature review of factors that influence drinking behavior in young adulthood, they demonstrated that many studies in this field examine students within the age range of 19-25; although variations in this age range exist (2010). It is important to consider that many incoming freshman are between 18 and 19 years old when they begin college. According to the National Student Clearinghouse Research Center's Current Term Enrollment Estimates, enrollment in four-year, public institution was higher among 18-24 year olds (N= 994,556) than individuals over 24 (N=31,201) in 2017. The same pattern was observed among students at four-year private nonprofit institutions, where students aged 18-24 (N=426,853) largely outnumbered students aged 24 and above (N=19,437; National Student Clearing House Research Center, 2018). For the purpose of this study, individuals within the age range of 18 to 25 who are enrolled in a four-year college or university will be examined.

Research has suggested that drinking behavior changes as individuals age. Therefore, it is important to consider that drinking frequency and quantity may vary as a person

ages. Longitudinal research data by O'Neill and Sher (2000) suggested that undergraduate frequency of drinking is moderately constant over time, and subsequently declines after graduation. They found that frequency of heavy drinking behaviors tended to be stable during college, but also decreased considerably after graduation. More specifically, they demonstrated that the quantity of alcohol consumed was consistent during the first three years of university, but was successively reduced during the fourth year of college and after graduation (O'neill & Sher, 2000). This gradual decline of heavy drinking through the progression of college years (and age), also known as the "maturing out," effect, has been observed by other research in the past (Fillmore, 1987; O'neill & Sher, 2000; Temple & Fillmore, 1986). Related research by Timberlake and colleagues found similar results through their examination of drinking behaviors across a typical four-year span of university. Their data indicated that heavy episodic drinking increased in younger college students (ages 18-19), whereas it decreased in older college students (ages 23-24). They also observed that there was a significant increase in heavy episodic drinking for students who were 18 years-old, the age that often marks initial enrollment into college (Timberlake, et. al, 2007).

Age of Drinking Onset. Prior research suggested a relationship between an earlier onset age of alcohol use and experiencing alcohol related problems later on. Hingson and Zha (2009) conducted a large-scale survey (N=43,093) that examined whether an earlier age of drinking onset was associated with experiencing later negative outcomes. The results indicated that individuals who started drinking at a younger age

were more likely to have driven while under the influence of alcohol and to have experienced dependence or alcohol abuse. They also had a higher likelihood of having been in a potentially harmful drinking situation and were more likely to drink 5 drinks (or more) per occasion on a weekly basis. Another related study revealed that individuals who started using alcohol before the age of 17 were more likely to have been involved in physical fights after drinking. Specifically, the respondents of the survey were 2.9 to 4.1 times more likely during their lifetime, or 3 times more likely within the last year, to have fought after consuming alcohol (Hingson et. al, 2001). This demonstrated an important association between alcohol-related violence and earlier age of drinking onset. Relationships between onset age of drinking and driving under the influence of alcohol have also been examined. A longitudinal study (N=1,833) demonstrated that students who initiated alcohol use earlier in life had more rapid increases of drinking and driving incidences between the first and fourth year of college (Quinn & Fromme, 2012). Accordingly, students who have an earlier onset age of drinking may benefit from alcohol prevention programming during their early college years. Other studies have demonstrated evidence for these claims by examining the latter effects of lower drinking ages in countries outside of the United States. For example, one international study that examined trends of alcohol use in Europe demonstrated evidence that college students and emerging adults in countries with lower legal drinking ages exhibit higher rates of heavy drinking (Anderson & Baumberg, 2006). This data and supporting information

from other related studies suggested that individuals who initiate drinking earlier in life may be an important target for research and intervention during their college careers.

Parental Factors

The influence of parents has shown to relate to drinking behaviors during college (Cleveland et al., 2011; Turrisi et al., 2010; Walls et al., 2009). Other studies have examined parental factors, such as permissiveness or alcohol approval and its effect on a child's later alcohol use. One study by Livingston et al., (2010) assessed young women who were permitted to drink at home at meals or with friends during their senior year of high school, and then compared their subsequent risk of heavy drinking while at college. The goal of this study was to examine whether allowing teens to drink under adult supervision before college could reduce heavy drinking among emerging adults in college. Results indicated that the students who were permitted to drink reported greater frequencies of heavy episodic drinking during their initial semester of college than those who were reportedly not allowed to drink in high school. Similarly, a longitudinal study revealed that parental permissiveness of alcohol use during high school was associated with greater alcohol use over time (Vorst et al., 2010). Another study by Varvil-weld et al. (2014) examined parental permissiveness while holding accounting for a variety of confounders, such as parental drinking habits and family history. They found that student's perceived parental limits of alcohol use is associated with later drinking and consequences during college. Overall, the majority of prior research in this realm has suggested that a positive relationship exists between parental permissiveness and elevated

drinking behaviors during college (Abar et al., 2009; Fairlie et al., 2012; Livingston et al., 2010; Varvil-weld et al., 2014).

Parental alcohol use can also effect a child's later trajectory of drinking. King and Chastain (2007) found that parental alcoholism is associated with higher chances of alcohol and drug dependence for their children, even when controlling for a variety of risk factors such as age, gender, and family conflict. A related study examined alcohol and drug use amongst children of alcoholics (ACOAs) in comparison to non-ACOAs within a college student population (N=572). The results indicated that ACOAs initiated alcohol use at an earlier age than non-ACOAs (Braitman et al., 2009).

It should be noted that other parental factors, such as monitoring and effective communication, have been shown to be protective factors against college drinking (Turisi et al., 2013). It's been suggested that such protective influences can potentially counter the negative influences of peers (Turrisi & Ray, 2010).

Consequences of Alcohol Misuse

According to the Centers for Disease Control and Prevention (2018), approximately 62,000 men and 26,000 women die from alcohol-related causes annually. This establishes alcohol as the third leading preventable cause of death of men and women in the United States (CDC, 2018). It is well cited that excessive alcohol use can result in both short term and long-term health effects, many of which can increase the risk of dangerous health conditions later in life. A major common short-term, or immediate, health risk associated with excessive drinking is bodily injury (e.g., motor vehicle

crashes, falls, drownings, and burns; Smith, Branas, & Miller, 1999; World Health Organization, 2014). The National Highway Traffic Safety Administration (2018) reported that 38 people were killed in drunk-driving accidents each day in 2017. This corresponds to approximately one drunk-driving related death every 48 minutes. Overall, alcohol impaired driving accounted for 10,874 fatalities, accounting for 29 percent of total driving fatalities in the United States in 2017 (National Highway Traffic Safety Administration, 2018).

Another common short-term alcohol-related health consequence is instances of violence (e.g., homicide, suicide, sexual assault, intimate partner violence; CDC, 2018). Because alcohol intoxication has shown to increase impulsivity, dysphoria, and intensity of suicidal ideation, people have an estimated seven times increased risk for a suicide attempt after drinking alcohol, a risk that rises to 37 times after heavy alcohol use (Borges et al., 2017; WHO, 2014). Research also indicates that alcohol use increases the severity and frequency of domestic and intimate partner violence (World Health Organization, 2006). Risky sexual behaviors (i.e., unprotected sex) is another health risk associated with alcohol misuse, which can result in unplanned pregnancy, sexual assault and/or sexually transmitted diseases (CDC, 2018). In fact, multiple studies have exhibited an association between binge drinking and unplanned pregnancy (Brewer, Gilbert, Lipscomb, & Naimi, 2003; Lundsberg, Peglow, Qasba, Yonkers & Gariepy, 2018). Miscarriages, stillbirths, and fetal alcohol spectrum disorders (FASDs) are harmful, alcohol-related health conditions that can place pregnant women at risk (CDC, 2018).

Alcohol misuse or excessive alcohol use over time can also lead to chronic, severe, long-term health consequences. This includes an increased risk for liver disease, heart disease, stroke, or high blood pressure (Rehm et al., 2010; World Health Organization, 2014). Alcohol also has long-term consequences. That is, alcohol use is known to increase the risk of developing multiple types of cancer; including colon, liver, esophagus, breast, mouth, and throat cancers (CDC, 2018; National Cancer Institute, 2018). Consequently, the consumption of alcoholic beverages is accepted, categorically, as a carcinogenic risk to humans (International Agency for Research on Cancer, 2012; National Toxicology Program of the US Department of Health and Human Services, 2016). Excessive alcohol use over time has also shown to contribute to learning and memory problems (CDC, 2018; WHO, 2014). Mental health diagnoses, such as anxiety and depression, have also been found to be related to alcohol use (CDC, 2018; WHO, 2014). In fact, it has been established that individuals who have an Alcohol Use Disorder (AUD) are at increased risk for having co-occurring depression (Boden & Fergusson, 2011). Alcohol dependence is another condition that is known to be a risk of long-term or excessive alcohol use (CDC, 2018; Connor, Haber & Hall, 2016; Esser, 2014). Unfortunately, alcohol misuse and alcoholism are highly common, often untreated conditions that lead to a variety of societal problems, such as unemployment and family conflict (Booth & Feng, 2002; Leonard & Rothbard, 1999).

College-Specific Consequences of Alcohol

Studies ranging from large-scale nationwide databases to smaller data collections from individual colleges and universities have mutually agreed that negative alcohol-related consequences tend to be commonplace on college campuses (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002). These negative consequences can include damage to oneself (i.e., personal injury and legal repercussions), damage to others (i.e., sexual violence, fights and interpersonal violence), or institutional costs (i.e., property damage; Perkins, 2002). Amongst drunk-drivers, the highest percentage of drivers with BACs of .08 g/dL or higher in 2017 was for 21- to 24-year-old drivers (27%), which is the corresponding age of many college students. Additionally, 42 percent of fatal drunk-driving crashes in 2017 were compromised of individuals aged 16 to 24 years (NHTSA, 2018) The College Alcohol Survey, an ongoing longitudinal survey by Glenn- Milo Santos and David Anderson, studied 394 four-year colleges and universities and their student's usage of alcohol, tobacco, other drugs, and violence issues. According to their most recent results, alcohol is involved with 72% of acquaintance rapes, 71% of sexual assault, 51% of unprotected sex, and 35% of physical injuries (Anderson & Santos, 2015). Harrington and Leitenberg (1994; n=942) surveyed female college students who had been victims of sexual aggression, and found that in 97% of the assaults, both the perpetrator and the victim had consumed alcohol. Academic problems, such as missing classes or lower grades, is another common drinking-related consequence, accounting for 30% of lack of academic success and 23% of student attrition (Anderson & Santos,

2015). Other potential consequences that are cited frequently in the available literature include: blackouts, hangovers, physical illness, impaired driving, and suicide attempts; just to name a few examples.

Cognitions and Alcohol Use among Students

Prior research has examined a student's frequency of negative consequences, which has led to an understanding of how these consequences influence subsequent drinking behaviors. There is evidence that experiencing a higher number of negative consequences predicts decreased alcohol usage and related problems later in life (White & Ray, 2014). Furthermore, one study by Park, Kim, and Sori (2013) determined that a higher incidence of positive consequences can predict greater rates of heavy drinking. However, simply knowing the frequency of drinking behaviors does not provide sufficient information about alcohol patterns in young adults (Klein, 1992). It is equally important to understand subjective aspects of why students drink and how they perceive drinking, because it affects their alcohol patterns, too (Klein, 1992). Therefore, it remains important to consider also the way students interpret and perceive consequences of drinking. These cognitions (i.e., subjective expectancies and interpretations), are central influences on an individual's behaviors, which aligns with cognitive behavioral theory, social learning theory, and theory of planned behavior (Merrill, Kahler, & Colby, 2015). Merrill, Read, and Barnett (2013) demonstrated the importance of these cognitions by presenting evidence that student's subjective evaluations of their alcohol consequences can predict subsequent changes in drinking behavior. Their results indicated that students

were more likely to report short-term reductions in alcohol use or related alcohol consequences in the following week after they experienced a negative consequence that they perceived to be, "relatively more upsetting or severe than usual." These findings suggested that subjective evaluations have a strong influence on future drinking behaviors. Due to the evidence of connection between cognitive evaluation and subsequent drinking behavior, is important to increase our current understanding of how college students perceive alcohol related problems and consequences.

Social Learning Theory

Social Learning Theory (SLT) has been used to examine influences of alcohol use behaviors. Generally, the foundation of the Social Learning Theory is a combination of elements from behavioral theory, such as conditioning, with elements of cognitive theory, such as expectancies and judgement (Bandura, 1986). Specifically, when SLT is applied to examine alcohol use, it is suggested that cognitions (e.g., motivations, interpretations, expectancies) are the central influences on problematic alcohol use behaviors. From an SLT perspective, if a person perceives an alcohol-related consequence to be aversive, severe, or problematic, their later drinking behaviors may decline. Conversely, if an individual does not interpret an alcohol-related consequence as negative, the behavior might ultimately be reinforced. This framework suggests that a person's cognitive evaluations of alcohol consequences may predict subsequent changes in drinking behavior (Barnett, Merrill & Read, 2013).

When analyzing the development and preservation of drinking behaviors in a social learning context, general theories of learning and cognition will be applied to better explain the underlying mechanisms. Bandura (1969) stated that cultural and subcultural norms will define whether alcohol use is acceptable in a certain environment. Within the environment, the quantity of alcohol and conditions for acceptable alcohol use is learned by observation and socialization, typically through media or peers. For example, one may learn though media, peers, or parents that alcohol use is encouraged and accepted at a party on a college campus. On the other hand, this *social reinforcement* likely also implies that this alcohol-use behavior is frowned upon at a work-related obligation. *Modeling*, or *vicarious learning*, describes behavioral learning that is followed by observing the behavior of others and the subsequent positive or negative consequences of the action (Bandura, 1969; Leonard & Blane, 1999). These behaviors are more likely to be imitated by the observer if the behavior involves a reward. For example, a college student who observes peers who are drinking, laughing, and enjoying themselves will likely associate the alcohol use behavior as rewarding or reinforcing, and will increase the likelihood that he or she will imitate this behavior in the future. Correspondingly, watching a behavior that results in punishment may cause the student to avoid similar behaviors in the future. The student's direct, personal experience with alcohol use will also serve as a process by which alcohol use behaviors are learned, avoided, or reinforced. For example, if the student experiences an alcohol related consequence that he or she associates as negative, this behavior may be avoided in the future. Cognitive

processes are the final piece of SLT in the context of alcohol use patterns. These processes are typically based on prior experience, and include *self-efficacy* and *alcohol outcome expectancies (*Bandura, 1977; Leonard & Blane, 1999). Self-efficacy is defined as a person's belief that they can initiate a certain behavior to achieve a desired outcome (Carey & Bonsari, 2009). Alcohol expectancies are defined as: "beliefs about the cognitive, affective or behavioral effects of alcohol use and can be both positive (e.g. 'drinking makes me more sociable') and negative" (e.g. 'when I drink, I often say things that I regret later'; Carey & Bonsari, 2009). Within the SLT framework, relationships between social reinforcement, modelling, and cognitions are bi-directional and dependent on one another (Bandura, 1986; Bandura, 1977; Lee, Maggs, Neighbors & Patrick, 2010). Lee et. al (2010) described relevant examples of the SLT construct as a student's, "beliefs and attributions of experiences with alcohol (e.g., "I became more social as a result of drinking") and may perpetuate future alcohol-related expectancies (belief that drinking leads to sociability) and motivations (drinking in order to be more social next time), and future drinking itself." Therefore, drinking and alcohol use, when examined within an SLT framework, can be described as a "feed-forward" process, which ultimately provides insight about the progression and maintenance of risky drinking among college students (Lee et al., 2010).

Student Perceptions of Alcohol-Related Consequences

There is variation in the subjective evaluation of alcohol-related consequences among college students (Patrick & Maggs, 2011). Mallet et al., (2008) assessed

variability of students' perceptions of negative consequences, and found that only half of the students in their sample who experienced physical penalties from alcohol misuse (e.g., blackouts) rated the consequence as negative. Therefore, it remains important to acknowledge the potentially meaningful differences of these perceptions. Understanding individual discrepancies in student's judgments of positive or negative consequences may provide additional insight toward understanding student's decisions to misuse alcohol (Patrick & Maggs, 2011). However, prior research has overlooked subjective differences and has less frequently focused on these factors, tending to label particular consequences as generally *good* or generally *bad* (Patrick & Maggs, 2011). Furthering the understanding of these individual differences by examining personal characteristics may provide additional insight about alcohol-related problems in this context.

Several studies have demonstrated that students judge certain alcohol-related consequences differently than researchers and clinicians would assume. For example, several studies have demonstrated that many consequences that clinicians and researchers have considered as "severe" were not actually perceived as negative by students (Mallet et. al, 2008; Merrill, Read & Barnett, 2012). In Mallet et al.'s (2012) study, college students rated driving drunk, *conflict with a partner or parents*, and *impaired quality of work/school-work* as most negative. On the other hand, they rated *needing a drink first thing in the morning*, tolerance, and *drinking on nights when one had planned not to* as some of the least negatively rated consequences. Interestingly, these consequences rated as less negative by the students are items that are associated with alcohol of greater

severity, such as loss of control (i.e., drinking on nights when one had planned not to), physiological dependence, and withdrawal (i.e., needing a drink first thing in the morning). These findings suggest that students who may need to make behavioral changes to their alcohol may not recognize that need (Merrill, Read, & Barnett, 2012). Therefore, to obtain a deeper understanding of this, it may be important to deepen our understanding of which consequences are viewed as worthy of future changes or reductions in drinking behaviors.

Rationale for Purposed Study

Whereas alcohol misuse behaviors have been extensively researched, few studies have examined and compared alcohol-related consequences, judgements, and their relationship to current drinking behaviors. Secondly, while most alcohol-related research has specifically drawn data from college populations, this study will gather information from a more inclusive and broad range of individuals. While the proposed study is focused on gaining more information about the perceptions and alcohol habits of college students, it will also provide more information about alcohol habits and judgments of the general public. The proposed study is distinctive and potentially significant due to its goal to explore relationships between current drinking patterns, experienced consequences, and a person's judgements of these consequences. Prior studies on related topics have examined these factors separately, but not at once. Further, as previously mentioned, this study is unique in that it will gather data from the general population, which will yield globally relevant information beyond what is available when solely examining a

collegiate population. This will also create an opportunity to examine specific demographic differences, for example, comparisons between those who are enrolled in college versus those who are not. This research is proposed at an important time period because literature has demonstrated that alcohol misuse and the related consequences remain pervasive and problematic among as U.S. college and universities, despite administration efforts. Further, it has been suggested that binge drinking, excessive drinking, and related problems have become even more deeply entrenched in college culture in recent years alongside the emergence of social media, alcohol advertising in films and on television, and other positive portrayals of drinking in films, television, and other media streaming outlets (e.g., Netflix).

Data obtained from the current research study could have potentially meaningful implications. Ultimately, the obtained results could provide information regarding the way people experience and perceive alcohol related consequences, which may inform general alcohol-abuse treatment interventions. Further, it may increase our understanding of current drinking behaviors in relation to prior alcohol related consequences, which may also be applied to the aforementioned context. This study has the potential to contribute to our current understanding of why some individuals drink in more problematic ways than others. More specifically, the results of this study will hope to serve, inform, and update alcohol misuse interventions for helping professionals within the context of a collegiate campus. Further, the results might add to the available data

regarding the implementation and cultivation of effective campus alcohol education programming.

Goals and Objectives

The reviewed literature suggests that certain emerging adults, a term which describes individuals aged 18-25, are more prone to experiencing consequences of alcohol use than others, such as students who are enrolled in a four-year college or university, those with Greek membership, people who started drinking at an earlier age, and students who live on campus.

The reviewed literature also suggested that students and researchers may have different perceptions of severity in terms of alcohol-related consequences, and those perceptions are likely to effect the way people consume alcohol. Therefore, (1) understanding the impact of alcohol-related consequences on current drinking behaviors, and (2) examining perceptions of consequences and their relationship to current drinking behaviors, are relevant objectives to this study. Obtaining this information may update our current understanding of which consequences students currently evaluate as severe *enough* to make behavioral changes to the way they drink, should those consequences occur. This information may clarify how to formulate effective interventions and encourage adaptive help-seeking behaviors within this population. Further, a deeper understanding of student's experiences, judgments, and their influence on current drinking behaviors may provide insight regarding what is currently considered to be a consequence worthy of

alcohol-reduction may help improve and personalize the alcohol education programming that incoming freshman often receive.

The purpose of the current study is to further the research involving experiences of alcohol misuse and consequences of misuse, which will increase our understanding of current perceptions and use of alcohol. This will also take into account noted risk factors, and perceived consequences of alcohol misuse in populations in the United States. Based on the limitations and specificity of college-aged students, the study will obtain a sample that includes a general population in hopes to make more general, far reaching conclusions. However, the study will also examine whether age or college enrollment has an influence on one's experiences of a negative consequence and their subsequent drinking behaviors, and their perception of these experiences. Ultimately, the results of this study may serve to inform and update alcohol misuse interventions for helping professionals within both a college population as well as a more broad substance abuse population of all ages. Furthermore, the results will enhance the available data regarding the implementation and cultivation of effective campus alcohol education programing.

Aims and Hypotheses

Based on the reviewed literature relating to this project, the following are the hypotheses of the proposed study:

1. Participants who have experienced a greater number of prior incidences of alcohol related consequences will demonstrate less harmful current patterns of alcohol consumption.

2. Participants who rate alcohol-related consequences to be less severe will demonstrate more harmful current patterns of alcohol consumption.
3. College enrollment status will have an effect on the relationships examined in hypothesis 1 and hypothesis 2.

    3a. The relationship between prior incidences of alcohol related consequences and current harmful patterns of alcohol consumption will be greater for individuals currently enrolled in college, when compared to those who are not currently enrolled in college.

    3b. Participants who are enrolled in college will rate prior alcohol-related consequences to be less severe will demonstrate higher-risk current patterns of alcohol consumption.
4. Age, specifically being within the age cohort of 18-25 years old, will have an effect on the relationships examined in hypothesis 1 and hypothesis 2.

    4a. The relationship between prior incidences of alcohol related consequences and current harmful patterns of alcohol consumption will be greater for individuals currently 18-25, when compared to participants are ages 26-65.

    4b. Participants who are ages 18-25 will rate prior incidences of alcohol-related consequences to be less severe and will demonstrate higher current patterns of alcohol consumption in comparison to participants ages 26-65.

Methods

Participants

Participants for this study will be adults above the age of 18. The participants will be recruited through the internet, including social media and Listserv email distributions. Participants will be limited to one survey completion per user. Participants will be excluded from the study if they are younger than 18 or older than 65, if they are not able to read the survey, or if they are not living in the United States.

Design

The proposed study will consist of a correlational research design to examine the relationship between prior incidences of alcohol-related consequences and current alcohol use behaviors. This design will also be utilized to explore the relationship between perceived severity of alcohol-related consequences and current alcohol use behaviors. The correlational design will also be applied to observe existing relationships between individual differences and prior experiences of alcohol-related incidences, current use behaviors, and perceived severity.

Setting

Surveys will be administered using an online survey platform. Participants can respond to the survey in any setting in which they have access to a smartphone, tablet, or computer. Therefore, participants are not limited to location or setting initiate a survey response. However, internet access is required for survey access and completion. Access

to Wi-Fi, wireless mobile connection, or other internet connection sources will be necessary for survey completion.

Materials and Measures

Survey

Participants will respond to survey questions using Qualtrics online survey platform. Demographic and individual information will be obtained prior to evaluating alcohol use behaviors, consequences, or judgements.

Assessment of Current Alcohol Use Behaviors

Each participant will answer a brief questionnaire about the amount and frequency of their current alcohol use, using the AUDIT (Alcohol Use Disorders Identification Test).

AUDIT (Alcohol Use Disorders Identification Test). The AUDIT (Babor, de la Fuente, & Grant, 1993; Barbor, de la Fuente, Saunders, Grant, & Aasland, 1992; Saunders, Aasland,) is a brief screening measure developed by the World Health Organization. This assessment was developed to identify individuals who exhibit alcohol consumption that "has become harmful or hazardous to their health" (NIH, 2000). The AUDIT screening tool was developed by surveying primary care patients across 6 countries (Australia, Bulgaria, Kenya, Mexico, Norway, USA), which led to cross-national standardization (Saunders, Aasland, Babor, de la Fuente & Grant, 1993; Saunders, Aasland, Amundsen, & Grant; WHO, 2001). The AUDIT has been found to be valid, efficient, and consistent in identification of harmful use, abuse behaviors, and

alcohol dependence. It has also shown to be an accurate measure of alcohol-related risk across cultures, gender, and age. (Saunders et. al, 1993; Saunders et. al, 1993b; WHO, 2001). The AUDIT has also shown to be reliable, as prior studies have indicated high internal consistency and high reliability (r=.86; Fleming, Barry & Macdonald, 1991; Hays, Merz & Nicholas, 1995; Sinclair, McRee, & Babor; WHO, 2001).

The AUDIT screening questionnaire includes 4 questions that pertain to difficulties caused by drinking (e.g., "How often during the last year have you had a feeling of guilt or remorse after drinking?"), 3 questions regarding the quantity and frequency of alcohol use (e.g., "How often do you have a drink containing alcohol?"), and 3 questions relating to alcohol dependence (e.g., "How often during the last year have you needed a first drinking in the morning to get yourself going after a heavy drinking session?"). The 10 items are scored on a scale of 0 to 4 by the participant, with a maximum possible score of 40. A score of 0-7 will reflect low-risk drinking or abstinence from alcohol. According to prior research, a cutoff score of greater than 8 has been established to indicate the presence of risky drinking behaviors (Saunders, et al., 1993).

Assessment of Experience of Alcohol Related Consequences

Participants will be prompted to indicate prior experience with 25 alcohol related consequences. Consequences were chosen to portray current, common, and relevant consequences that people may experience due to alcohol use. Participants will also be prompted to indicate whether or not they have experienced each consequence. If they have experienced a certain consequence, they will indicate how many times it has

occurred. They will also indicate much time has passed since the consequence occurred (e.g. within past year, 1+ year ago, 5+ years ago).

Assessment of Perceptions of Alcohol Related Consequences

Participants will be prompted to rate their perceived severity of previously experienced consequences. Participants will be asked to consider how much this experience bothered them, using a 5 point, Likert scale severity scale of 1 (not at all severe) to 5 (extremely severe).

Procedure

Participants will respond to an online questionnaire created using Qualtrics online survey platform. Following a survey correspondence, the data collected from the survey questionnaires will be collected and placed into a database, then analyzed using IBM Statistical Package for the Social Sciences (SPSS) software. The participant's will be separated into appropriate domains for analysis based on their AUDIT scores, labeled accordingly as "Low Risk Drinking," for scores below 8, and "Risky Drinking" for scores above 8. The participant's number of prior alcohol-related consequences will be entered into a database, alongside corresponding severity ratings of each consequences. Individual factors, including current college enrollment, campus living arrangements, educational attainment, religion, perceived parental leniency, age, age of onset drinking, and age of initial college enrollment, will also be entered into the database for either current analysis or for analysis in future projects.

Statistical Methods

All data were analyzed using SPSS version 25. Descriptive and frequency summary data were calculated to obtain the demographic information for the sample used for this study.

To examine the relationship between number of prior incidences of alcohol-related consequences and current patterns of alcohol consumption (AUDIT scores), as specified by "Low Risk Drinking" and "Risky Drinking," a chi square analysis will used to identify relationships between these factors. To examine the relationship between prior incidences of alcohol related consequences and perceived severity, a chi square analysis will be utilized. A chi square analysis will be utilized to observe the potential impact of enrollment status on the relationship between prior incidences of alcohol related consequences and harmful patterns of alcohol consumption (AUDIT scores). A chi square analysis will also be used to examine potential impact of enrollment status on the relationship between prior incidences of alcohol related consequences (AUDIT scores) and perceived severity. To measure whether age, specifically being within the age cohort of 18-25, has an effect on the relationship between prior incidences of alcohol related consequences and harmful patterns of alcohol consumption (AUDIT scores), a chi square analysis will be utilized. A final chi square analysis will be implemented to analyze the role of age in the relationship between alcohol related consequences (AUDIT scores) and perceived severity.

Results

Participant demographics, including gender, age, race and ethnicity were examined. The survey yielded 579 responses. There were a total of 182 (31.4%) male and 285 (66.5%) female, and 12 (2.1%) participants who preferred to not share their gender. The average age of participants was 28.0 years (*SD*=8.5). In regards to race and ethnicity, the sample included 476 Caucasian (82.2%) participants, 32 (5.5%) Hispanic participants, 29 (5.0%) Asian participants, 12 (2.1%) African American participants, 3 (.5%) Pacific Islander participants, 3 (.5%) Native American/American Indian participants, and 24 (4.1%) participants who identified their race/ethnicity as "Other." There were 423 (73.1%) heterosexual participants, 99 (17.1%) bisexual participants, 32 (5.5%) homosexual participants, while 17 (2.9%) participants selected "Other," and 8 (1.4%) selected "Prefer not to say."

In regards to frequencies for variables relating to educational attainment, there were 33 (8.0%) respondents who were currently enrolled in a four-year university or college, and 378 (92.0%) who were not currently enrolled. As for highest level of education, there were 243 (42.0%) individuals who had completed a bachelor's degree, 122 (21.1%) had completed a master's degree, 100 (17.3%) had completed a high school diploma or GED, 52 (9.0%) had completed an associate's degree, 46 (7.9%) had completed a doctorate degree, and 12 (2.1%) had completed a trade school verification.

Of the participants who indicated either current enrollment or prior completion of a four- year university or college (*N*=411), 103 (25.1%) participants were a current or

past member of a Greek organization, while 308 respondents (74.9%) were not. Of these same participants (*N*=411), 46 (11.2%) were a current or past member of a student athletic team, while 365 respondents (88.8%) were not.

As far as factors relating to alcohol use, 291 (52.4%) respondents indicated that they were permitted by their parents to drink alcohol under their supervision prior to the legal drinking age, while 264 (47.6%) participants indicated that they were not permitted to do so. In regards to age of onset drinking, 270 (48.6%) participants indicated that they began drinking between the ages of 17 and 20, 185 (33.3%) between the ages of 13 and 16, 71 (12.8%) between the ages of 21 and 25, 25 (4.5%) ages 12 or younger, and 5 (.9%) were over the age of 26. The average AUDIT score was 6.47 (*SD*=5.42). The average number of consequences was 7.93 (*SD*=5.24).

Hypothesis 1

This study hypothesized that participants who had experienced a greater number of prior incidences of alcohol related consequences would demonstrate less harmful current patterns of alcohol consumption. There was a significant association between AUDIT scores and prior experiences of alcohol-related consequences χ_2 (2) =135.7, $p <$ .01. The results further indicated that an AUDIT score within the "High Risk" range (8-12) was associated with a higher number of prior alcohol related consequences. Conversely, an AUDIT score within the "Low Risk" range (0-7) was associated with a lower number of alcohol related consequences. Supplementary analysis reveals AUDIT

scores are also significantly correlated with number of prior consequences, $r = .62$, $p < .001$.

Hypothesis 2

The second hypothesis of this study predicted that participants who rated alcohol-related consequences to be less severe would demonstrate more harmful current patterns of alcohol consumption. There was also a significant association between AUDIT scores and severity ratings of prior alcohol related consequences, $\chi_2 (2) = 12.6$, $p < .01$. The results further indicated that an AUDIT score within the "High Risk" range (8-12) was associated with less severe ratings of prior alcohol related consequences. Conversely, an AUDIT score within the "Low Risk" range (0-7) was associated with more severe ratings of prior alcohol related consequences. AUDIT scores are also significantly correlated with severity ratings, $r = .20$, $p < .001$. Number of prior alcohol-related consequences is significantly correlated with participant's severity ratings of prior alcohol-related consequences, $r = .41$, $p < .001$.

Hypothesis 3

The third hypothesis of this study examined the role of college enrollment status and whether or not it would have an effect on the relationships examined in hypothesis 1 and hypothesis 2. Thus, hypothesis 3 was broken down in to two separate chi-square analyses and described below.

3a. Hypothesis 3a examined the role of college enrollment status and its effect on the relationship between prior incidences of alcohol related consequences and current

harmful patterns of alcohol consumption. This study hypothesized that the relationship between prior incidences of alcohol related consequences and current harmful patterns of alcohol consumption will be greater for individuals currently enrolled in college, when compared to those who are not currently enrolled in college. Results indicated that the association between AUDIT scores and prior experiences of alcohol related consequences was maintained for non-college, χ_2 (2) =79.56, $p < .01$, and the total sample, $\chi_2(2)$ =80.49, $p < .01$. However, the association was not demonstrated for those currently enrolled in college, χ_2 (2) =3.02, p =.389. Thus, not being currently enrolled in college appeared to have an effect on the association between AUDIT scores and prior experiences of alcohol related consequences.

3b. Hypothesis 3b examined the role of college enrollment status and its effect on the relationship between current harmful patterns of alcohol consumption and severity ratings of prior alcohol related consequences. It was hypothesized that participants who are enrolled in college will rate prior alcohol-related consequences to be less severe will demonstrate higher-risk current patterns of alcohol consumption. Results indicated that the association between AUDIT scores and severity ratings was the same for both enrollment statuses**.** More specifically, the association between AUDIT scores and severity ratings of prior alcohol related consequences was not seen in the current enrollment group, $\chi_2(2)$ =1.12, p =.293, or the non-college group, $\chi_2(2)$ =5.47, p= .065, individually. However, when combined, the association is remains present for population as a whole, $\chi_2(2)$ =6.31, $p < .01$.

Hypothesis 4

The fourth hypothesis examined the role of age and whether or not it would have an effect on the relationships examined in Hypothesis 1 and Hypothesis 2. It was hypothesized that age demographics would have an effect on those relationships. Hypothesis 4 was broken down in to two separate chi-square analyses, and described below.

4a. Hypothesis 4a speculated that the relationship between prior incidences of alcohol related consequences and harmful patterns of alcohol consumption will be greater for individuals who are between ages 18-25, when compared to participants are ages 26-65. The analysis indicated that the association between AUDIT scores and prior experiences of alcohol related consequences was the same for both age groups, χ_2 (2) =85.96, $p < .01$ (ages 18-25), χ_2(2) =55.24, $p < .01$ (ages 26-65).

4b. Hypothesis 4b hypothesized that participants who are ages 18-25 will rate their prior alcohol-related consequences to be less severe and will demonstrate higher-risk patterns of alcohol consumption in comparison to participants ages 26-65. Results indicated an association between AUDIT scores and severity ratings existed amongst individuals ages 18-25, χ_2 (2) =10.35, $p < .01$. Specifically, within the cohort of individuals ages 18-25, the results indicated that a "High Risk" AUDIT score was associated with less severe ratings of prior alcohol related consequences. The same association did not exist for the age group of individuals ages 26-65, χ_2 (2) =4.78, p =.091.

Discussion

Prior research has indicated that experiencing a higher number of negative consequences predicts decreased alcohol usage and related problems (White & Ray, 2014). This phenomena can be explained by social and behavioral theories, positing that behaviors (either personally experienced or observed through others) that lead to aversive experiences are less likely to occur again. Based on that information, this study hypothesized that individuals who have experienced a greater number of prior negative alcohol-related consequences would exhibit less harmful patterns of current alcohol use. However, the contrary was demonstrated by the analysis of the primary hypothesis of the present study, which examined the association between problematic drinking behaviors and prior alcohol related consequences. The results of the present study indicate that "High Risk" current drinking behaviors (from participants' AUDIT score) are associated with a greater number of prior alcohol related incidences. This suggests that people will continue to drink in the face of negative consequences relating to their drinking patterns. Evidence of this pattern within college students has been cited through past literature (Mallett, Varvil-Weld, et al., 2013, Mallett, Marzell, et al., 2011) For example, in Patrick & Maggs's (2008) 10-week diary study, it was found that students' experiences of negative alcohol-related consequences did not contribute to subsequent decreases in drinking. While evidence for this phenomenon has grown in recent years, it has almost exclusively focused on the behaviors of college populations. These studies imply that the punishing effects of prior consequences of alcohol behaviors are not strong enough to be

consistent with the social and behavioral processes that are expected to be in play, at least for people in this age and developmental range (Bandura, 2001; Martinez et. al, 2014). Additionally, the reinforcing effects of alcohol use, both social and at times, physiological, are too great despite the consequences.

The current study was unique in that it attempted to generalize these findings, to a large demographic segment, including that of the non-college population. Additionally, this study utilized the Alcohol Use Disorders Identification Test (AUDIT), which is a commonly used tool developed by the World Health Organization, respected as an effective tool in detecting risky drinking. Few, if any studies in this realm, have used this measure to examine current alcohol use and its relationship to prior consequences. Taken altogether, the results of Hypothesis 1 of this study demonstrates evidence for the idea that individuals who exhibit risky current drinking patterns are not likely to discontinue these patterns, despite prior incidences of aversive consequences. The implications of these results can be taken into consideration for a broad population of individuals.

Another major objective of this study to examine perceptions of alcohol-related consequences and their relationship to current drinking behaviors. The second hypothesis of this study predicted that participants who rated alcohol-related consequences to be less severe would demonstrate more harmful current patterns of alcohol consumption. The results indicated that an AUDIT score within the “High Risk” range was associated with less severe ratings of their prior alcohol related consequences. Conversely, an AUDIT score within the “Low Risk” range was associated with more severe ratings of prior

alcohol related consequences. Unlike the results of Hypothesis 1, the results of Hypothesis 2 align with the Social Learning Theory tenants of alcohol use, which suggest that cognitions (e.g., motivations, interpretations, expectancies) heavily influence drinking behaviors. From this perspective, if a person perceives a prior experience to be severe, their later drinking behaviors are likely to decline and they are more likely to not repeat the behavior that lead to the aversive consequence. Hypothesis 2 displayed this pattern: exhibiting higher- risk drinking patterns was associated with less severe ratings of prior alcohol consequences, while lower-risk drinking patterns were associated with more severe ratings of prior alcohol consequences. That is, those who displayed risky drinking habits regarded their prior alcohol-related experiences as less bothersome, while participants who displayed low risk drinking patterns perceived their prior alcohol-related experience as generally more troubling. This suggested and further reinforces the theory that cognitions are a central and mediating construct of alcohol related behaviors. This data is important because specific mediating constructs, such as alcohol expectancies, are often left empirically unmeasured (Botvin & Griffin, 2004; Del Boca, Darkes, Goldman, & Smith, 2002; Jensen, Weersing, Hoagwood, & Goldman, 2005; Petraitis, Flay, & Miller, 1995). Additionally, many intervention programs that are intended to reduce alcohol have utilized hypotheses about alcohol expectations, despite the lack of empirical data surrounding these influences (Patrick & Maggs, 2007).

The third hypothesis of this study examined the role of college enrollment status, based on the existing literature that suggested that students who are currently enrolled in

a four-year university experience more alcohol-related problems, higher alcohol use frequency, and increased and incidences of binge drinking (Velazquez et al., 2011). The analysis in this study yielded results signifying that college status did not directly affect the relationship between current harmful patterns of alcohol use (AUDIT score) and number of prior consequences or the relationship between hazardous alcohol use (AUDIT score) and severity ratings of prior consequences. This finding should be interpreted with caution due to the small number of responses collected from currently enrolled college students. Although there is prior literature that supports the non-effect of college status, the results of the present analysis are likely inaccurate due to sampling. Nevertheless, given the frequently cited research regarding alcohol problems amongst college students, this hypothesis is regarded as an area for future research alongside a more representative college student sample.

The final hypothesis investigated the role of age in the relationships examined in Hypothesis 1 and Hypothesis 2. It was hypothesized that a stronger relationship would be present between prior incidences of alcohol related consequences and current hazardous alcohol consumption for individuals ages 18-25, in comparison to individuals ages 26-65. The results indicated that there was not a difference in the respective age groupings. These results strengthen the implications of Hypothesis 1, which demonstrates broadly that people who exhibit risky current drinking patterns are likely to continue these patterns, despite prior incidences of aversive consequences. The added data regarding age might indicate that the “maturing out” effect that is often observed may not be applicable

to individuals (regardless of age) who exhibit consistent high-risk drinking patterns. For reference, the "maturing out" effect describes the gradual decline of heavy substance use through the progression of development, including college years (and age), that has been cited in and documented previously (e.g., Fillmore, 1987; O'Neill & Sher, 2000; Temple & Fillmore, 1986; Timberlake et al., 2007). The second part of Hypothesis 4 examined whether participants aged 18-25 would rate their prior alcohol-related consequences differently and would demonstrate different patterns of risk of alcohol consumption in comparison to participants ages 26-65. The results indicated that a "High Risk" AUDIT score was associated with less severe ratings of prior alcohol related consequences for individuals ages 18-25. The same association did not exist for the age group of individuals ages 26-65. These results argue for a cognitive component of the "maturing out" effect, suggesting that age, and perhaps life experience, affect perceptions of aversive drinking occurrences. This aligns with prior research that indicated that older participants viewed alcohol related consequences as more bothersome (White & Ray, 2014). Further, cognitive development and moral maturity might play a role in this progression, and would be an interesting direction for future research.

Limitations

There are several limitations of the current study. The first, and most notable, involves the limited sample of college-enrolled participants. This affected the ability to appropriately examine certain variables of interest relating to college experience and its relationship to drinking outcomes. Additionally, this also limited the study's ability to

compare college students with non-college students within the same age demographic, which was an original objective of the study. This study also aimed to examine the "forgotten demographic," or individuals who are college aged, but not enrolled in a university, that are often overlooked in empirical research studies. However, despite efforts to obtain a more encompassing sample outside of the college realm, such comparisons were not attainable given the sample's demographics. Another limitation involved the method of collecting data regarding past alcohol related experiences. The method used in this study allowed the participant to identify how many alcohol-related consequences they experienced in their lifetime, regardless of how long ago it occurred. However, according to Gmel and Rehm (2004), self-reports that are collected closer in time to the drinking behavior are considered to be more accurate than retrospective reports of drinking. Thus, limiting the consequences to incidences that have occurred within a specified time range (i.e., within the past two years), might have complemented the analyses. A final limitation of the current study is that it only measured current patterns of alcohol use. The participants' present use of alcohol was a main area of interest, which led to using a measure of current use. However, it should be noted that more distal mediators that can affect a person's alcohol use, such as family history, were not measured.

Furthermore, whenever surveying information of problematic behavior, it is expected to get some level of resistance. Whereas the target sample size was expected to compensate, somewhat for this consideration, it remains a concern. That is, probing of

negative behaviors and regretful events in one's life may lead to underreporting, or minimizing of the impact of the event related to cognitive dissonance. Overall, reporting error is to be taken into account given the self-report model of the data collection.

Future directions

It is suggested that future studies ensure a sample that includes comparable numbers of college enrolled individuals and non-college enrolled individuals. Most existing studies in this realm either focus exclusively on college students or on clinical samples, which does not allow for group comparisons. Thus, to make comparisons as this study intended to do, it is suggested that the study aim to capture a somewhat large and representative sample. Additionally, to account for additional intermediaries that can play into high-risk alcohol behaviors, such as family history or treatment history, a future study might be examine these variables for comparison. An interesting area of future research may involve exploring the effect of recency of prior consequences on current drinking behaviors, as well as one's personal life experience with alcohol. Increasing our understanding of these influences will improve our overall understanding of problematic alcohol use and how to address those who drink in risky ways.

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Tables

Table 1.

Means, Standard Deviations, and Correlations for All Variables

Variable	*M*	*SD*	1	2
1. AUDIT	6.47	5.42	-	
2. Conseq	7.93	5.24	.62**	-
3. Severity	2.80	.79	.20**	.41**

Note *$p < .05$, **$p < .01$. AUDIT =Alcohol Use Disorder Identification Test Scores, Conseq = Number of prior alcohol-related consequences, Severity = Severity ratings of prior alcohol-related consequences.