

ANALYZING THE USE OF ALCOHOL-RELATED PROTECTIVE BEHAVIORS
AMONG COLLEGE STUDENTS ATTENDING A
MIDWEST LIBERAL ARTS UNIVERSITY

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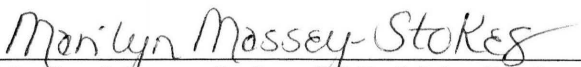
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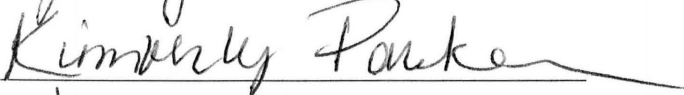
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To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Celeste Holbrook entitled "Analyzing the Use of Alcohol-Related Protective Behaviors Among College Students Attending a Midwest Liberal Arts University." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Health Studies.


Marilyn Massey-Stokes, Ed.D. Major Professor

We have read this dissertation and recommend its acceptance:


Department Chair

Accepted:


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ABSTRACT

CELESTE HOLBROOK

ANALYZING THE USE OF ALCOHOL-RELATED PROTECTIVE BEHAVIORS AMONG COLLEGE STUDENTS ATTENDING A MIDWEST LIBERAL ARTS UNIVERSITY

DECEMBER 2011

The increased use of alcohol among college students has raised concern among health educators. High-risk drinking behaviors are widely popular in many groups of college students, and binge drinking is especially common. Studies indicate that two out of every five American college students are considered binge drinkers (O'Malley & Johnston, 2002). Many types of health education programs have been utilized by campus health educators to reduce alcohol-related negative consequences among college students (The Bacchus Network, n.d.). One particular type of intervention includes the promotion of alcohol-related protective behaviors that can be employed by students to reduce the occurrence of alcohol-related consequences (College Drinking Prevention, 2010a).

This study identified the frequency of nine alcohol-related protective behaviors that undergraduate students who attended a Midwestern U.S. university employ to reduce the negative consequences of frequent, heavy alcohol use. The null hypothesis indicated that there would be no difference in the use of alcohol-related protective behaviors by gender (male vs. female), Greek affiliation (students who identify as Greek vs.

independent), or living status (students who live on campus vs. those who live off campus). A secondary data set collected in 2007 from the students was analyzed for this study. The findings indicated that gender and Greek affiliation had a significant effect on the use of alcohol-related protective behaviors, while living status had no significant effect on alcohol-related protective behaviors. The influences of gender, Greek affiliation, and living status were examined in relation to theoretically based health education programs aimed at reducing alcohol-related negative consequences. Further research on alcohol-related protective behaviors in this population can help health educators plan, implement, and evaluate programs to reduce negative consequences of alcohol consumption by college students.

TABLE OF CONTENTS

| | Page |
|--|--------|
| ACKNOWLEDGEMENT..... | iii |
| ABSTRACT..... | iv |
| LIST OF TABLES..... | viii |
| Chapter | |
| I. INTRODUCTION | 1 |
| Statement of Purpose | 4 |
| Null Hypotheses | 5 |
| Delimitations | 5 |
| Limitations..... | 6 |
| Assumptions..... | 6 |
| Definitions of Terms | 7 |
| Importance of the Study | 8 |
| II. LITERATURE REVIEW | 10 |
| College Students | 10 |
| Missouri | 10 |
| Truman State University | 11 |
| High-Risk Drinking Among College Students | 11 |
| Negative Consequences of High-Risk Drinking..... | 16 |
| Death..... | 16 |
| Injury..... | 19 |
| Sexual Assault | 20 |
| Legal Implications | 20 |
| Academic Issues | 21 |
| Cognitive and Emotional Development | 22 |
| High-Risk Drinking Reduction Strategies..... | 23 |
| Social Cognitive Theory..... | 27 |
| Reciprocal Determinism | 29 |
| Outcome Expectations..... | 30 |
| Self-efficacy | 31 |

| | |
|--|--------|
| Observational Learning | 32 |
| Incentive Motivation and Facilitation..... | 32 |
| 3-in-1 Framework Interventions | 33 |
| Individuals | 34 |
| College and Surrounding Community | 35 |
| The Student Population | 37 |
| Alcohol-Related Protective Behaviors..... | 39 |
| Summary..... | 41 |
| III. METHODOLOGY | 43 |
| Human Participant Protection | 43 |
| Study Instrument | 43 |
| Sampling Procedures and Data Collection..... | 44 |
| Data Analysis | 45 |
| IV. RESULTS..... | 46 |
| Demographics..... | 46 |
| Exploratory Factor Analysis..... | 48 |
| Summary..... | 54 |
| V. DISCUSSION | 56 |
| Conclusions..... | 57 |
| Relationship Between Gender and Alcohol-Related Protective Behaviors..... | 57 |
| Relationship Between Greek Status and Alcohol-Related Protective Behaviors..... | 57 |
| Relationship Between Living Situation and Alcohol-Related Protective Behaviors | 57 |
| Discussion and Implications | 58 |
| Gender | 58 |
| Greek Status..... | 61 |
| Living Situation..... | 62 |
| Implications for Education Programming | 63 |
| Implications for Health Educators | 67 |
| Limitations..... | 70 |
| Recommendations..... | 71 |
| REFERENCES..... | 74 |
| APPENDIX | |
| A. Attitudes About Alcohol Survey | 85 |

LIST OF TABLES

| Table | Page |
|---|------|
| 1. Frequencies and Percentages of Demographic Categorical Variables | 47 |
| 2. Means and Standard Deviations of Demographic Continuous Variables..... | 48 |
| 3. Means and Standard Deviations of Alcohol Protective Behavior Items by Gender..... | 50 |
| 4. Means and Standard Deviations of Alcohol Protective Behavior Items By Affiliation..... | 52 |
| 5. Means and Standard Deviations of Alcohol Protective Behavior Items by Living Situation..... | 53 |

CHAPTER I

INTRODUCTION

Many people consider the excessive use of alcohol by college students a right of passage. Many college students take advantage of the new-found freedom that college provides, indulging in excessive amounts of alcohol that may have been forbidden just months earlier when still under their parent's roof. The increased use of alcohol among college students has caused reason for concern among researchers and health educators (College Drinking Prevention, 2010a). Consistently heavy use of alcohol can lead to long-term chronic diseases, and instant traumatic outcomes of alcohol consumption can lead to death or disability at a fairly young age. Overall, there is a causal relationship between alcohol consumption and at least 60 different injuries and diseases (World Health Organization, 2011).

According to the American Psychiatric Association's (APA) *Diagnostic and Statistical Manual of Mental Disorders* [4th ed., text revision] (2000), there are two main categories of unhealthy alcohol consumption: alcohol dependence and alcohol abuse. Alcohol dependence, often called *alcoholism*, is defined by three main symptoms. The first is a dependency on alcohol and includes a strong craving and tolerance for the substance. The second is continued use despite social and physical problems, and the third is the onset of withdrawal symptoms when alcohol is removed from the body (APA, 2000).

Alcohol abuse is a strong risk factor for becoming dependent upon alcohol (Centers for Disease Control and Prevention [CDC], 2010a). According to the APA (2000), alcohol abuse is defined as a problematic pattern of drinking leading to impairment or distress of at least one of the following in a 12-month period:

- Substance use resulting in the failure to fulfill obligations at work, home, or school
- Substance use in physically hazardous situations (like driving a vehicle)
- Recurrent substance-related legal problems
- Continued substance use despite persistent social or interpersonal problems

National studies have indicated that alcohol abuse is common on college campuses (Knight et al., 2002). For example, a large-scale study of U.S. college students indicated that 31% of those surveyed qualified for an alcohol abuse diagnosis in the past 12 months (Knight et al., 2002).

One very pervasive type of alcohol abuse among college students is binge drinking (CDC, 2010b). Binge drinking has been defined by the National Institute of Alcohol Abuse and Alcoholism (NIAAA) as a pattern of drinking that brings blood alcohol concentration to 0.08 gram percent or above. For the typical adult, this pattern corresponds to consuming five or more drinks for a male and four or more drinks for a female in about 2 hours (NIAAA, 2004). According to O'Malley and Johnston (2002), approximately 2 out of 5 American college students were found to be binge drinkers. The proportion of current alcohol drinkers who binge is highest (51%) among individuals

in the traditional college-age bracket (i.e., between 18 and 20 years of age; Naimi et al., 2003).

Students with high-risk drinking issues, such as binge drinking, are at higher risk for experiencing alcohol-related consequences, such as unintentional injuries, unplanned sex, sexual assault, and academic problems (Knight et al., 2002). Drinking also has negative consequences on the temporary psychological functioning of the student, impairing his ability to execute basic cognitive skills. This includes the ability to plan, self-monitor, organize, and reason (Lyvers & Tobias-Webb, 2010). Extended use of alcohol and/or alcohol dependence can have lasting affects on the brain, permanently impairing cognition and brain function (Pihl, 2003).

College health educators have attempted to reduce the undesirable consequences of high-risk drinking by adopting multiple intervention approaches. Examples of campus efforts include, but are not limited to, promoting an abstinence policy on campus, working with local bars to provide free non-alcoholic drinks to designated drivers, and using peer educators to act as role models of responsible drinking for other students (Haines, 2006).

Another approach, known as *protective behaviors*, focuses on reducing risk. Protective behaviors are those that are executed with the intent of reducing harm. These risk-reducing behaviors intended to reduce the negative consequences of alcohol are called alcohol-related protective behaviors and include designating a sober driver, alternating food with alcoholic beverages, or avoiding drinking games (Haines, 2006).

These alcohol-related protective behaviors may alleviate the negative consequences associated with high-risk drinking because they can reduce the amount of alcohol consumed. They may also promote strategies that help students drink more safely, such as watching a friend's drink for her while she is away to reduce the risk of a spiked drink (Walters, Bahman, Vader, & Harris, 2007).

The present study sought to add to previous research on a wide range of alcohol-related protective behaviors by examining differences in the use of these protective behaviors by comparing them by gender, living situation, and Greek affiliation. These categorical comparisons provided new insight into the use of alcohol-related protective behaviors by traditional-aged, undergraduate college students.

Understanding the use and frequency of alcohol-related protective behaviors can help college health educators plan, implement and evaluate more effective health communication messages targeting college students who drink alcohol. In turn, promoting alcohol-related protective behaviors may help reduce high-risk drinking and alcohol-related negative consequences among college students (College Drinking Prevention, 2010b).

Statement of Purpose

The purpose of this study was to analyze the use of alcohol-related protective behaviors reported by college students attending a Midwestern U.S. university. The use of alcohol-related protective behaviors was analyzed by gender, living situation, and Greek affiliation.

Null Hypotheses

The following null hypotheses were tested at the .05 level of significance:

H1₀. There will be no significant difference between the self-reported frequency of alcohol-related protective drinking behaviors of female students versus male students.

H2₀. There will be no significant difference in the self-reported frequency of alcohol-related protective drinking behaviors between those who live in a residence hall, an apartment or house, or a fraternity or sorority and those living at home with a guardian.

H3₀. There will be no significant difference in frequency of self-reported alcohol-related protective drinking behaviors between those who identify as Greek and those who identify as Independent.

Delimitations

This study had the following delimitations:

1. All data were self-reported.
2. All data were gathered from a secondary data source.
3. Participants were over the age of 18.
4. Participants under the legal drinking age of 21 were asked to respond to questions concerning alcohol intake, which may have created a barrier to honest self-reporting.

Limitations

This study had the following limitations:

1. The tendency of the participants to answer in a more socially desirable way could have affected the participants' responses.
2. The items developed in this survey were not designed for the express purpose of this particular study. Only a subset of the survey was used for this study.
3. Students were recruited from one basic health course required for all students attending Truman State University (TSU) in the fall semester of 2007, which created a nonrandom convenience sample. Therefore, the findings can only be generalized to the study population and not to the entire U.S. population of college students.

Assumptions

The assumptions were as follows:

1. Participants were able to read and write English and fully comprehend the questions.
2. Participants were willing to share information regarding their personal alcohol consumption.
3. Participants recalled the frequency of their alcohol-related protective behaviors to the best of their ability.
4. Survey data was accurately entered into SPSS by approved student workers.

Definitions of Terms

Alcohol-related protective behavior: A behavior that is intended to reduce the risk of harm associated with alcohol consumption (Haines, 2006).

Behavior setting: Social and physical situations in which behaviors take place (Mace & Heft, 2010).

Blood alcohol concentration: The amount of alcohol contained in a person's blood, measured through weight per unit volume of blood (Highway Safety Research Center, n.d.).

Greek: A college student who identifies as being a member of a sorority or fraternity on campus.

Health promotive environment: Environmental factors that may facilitate health behavior changes (Sallis, Owen, & Fisher, 2008).

High-risk drinking: Excessive consumption of alcohol that leads to serious negative consequences, not only for those who are drinking but also for others around the person drinking (Baer, 2005).

Independent: A student who does not identify as being a member of a sorority or fraternity on campus.

Intrapersonal: Thoughts and feelings that occur in one's mind or self (Drench, Noonan, Sharby, & Ventura, 2007).

Policy: Legislative, regulatory, or policymaking actions that have the potential to affect health behaviors, sometimes unintentionally; policies are sociocultural influences that can alter physical environments (Sallis et al., 2008).

Protective behavior: A behavior that is intended to reduce the risk of harm (Haines, 2006).

Importance of the Study

Until recently, alcohol-related interventions on U.S. college campuses have been primarily focused on abstinence messaging for the individual, the campus, or the community; however, studies have maintained that binge drinking is an inherent product of the college environment and will occur regardless of intervention strategies designed to eliminate alcohol consumption (Haines, 1996, 2006). Therefore, intervention programs can focus on promoting alcohol-related protective behaviors without directly focusing on abstaining from alcohol consumption. The current study provides insight into the use of alcohol-related protective behaviors by college students in a Midwest university and how these behaviors differ by gender, living situation, and Greek affiliation. Understanding the use of a broad range of alcohol-related protective behaviors in this population and by these categories is necessary because previous studies have focused primarily on a more limited list of alcohol-related protective behaviors. Furthermore, previous studies have focused on students who already identify as being heavy drinkers (Baer, 2005). Health educators on college campuses can use this information to enhance health communication strategies that encourage alcohol-related

protective behaviors. Additionally, research on alcohol-related protective behaviors in this population can help health educators plan, implement, and evaluate programs to reduce negative consequences of alcohol consumption by college students.

CHAPTER II

LITERATURE REVIEW

College Students

Postsecondary education attendance in the United States has dramatically increased in the past 30 years (National Center for Education Statistics [NCES], 2009). According to the NCES (2009) undergraduate enrollment rose 25% between 1997 and 2007. It is estimated that enrollment in degree-granting institutions in the US will rise to 20 million by 2017. The majority of these students are between the ages of 18 and 24 and will be entering college right after or soon after completing a high school education. For most of these students, attending college is a rite of passage that helps them bridge the gap to young adulthood by experiencing independence from their parents and exercising the ability to make decisions with a new degree of autonomy (NCES, 2009).

Missouri

According to the NCES (2009), the state of Missouri has 128 degree-granting institutions of higher education. This number is higher than most states; the average number of higher education institutions per state is 85, with California having the most higher education institutions at 416 and Alaska having the least at 7. Missouri has approximately 377,000 students enrolled in universities, with 159,000 males and 218,000 females. Missouri has more students enrolled in public universities than

private universities, with enrollments of 218,000 and 159,000, respectively (NCES, 2006).

Truman State University

TSU is one of the nine largest public universities in Missouri (TSU, 2010). Located in the town of Kirksville, TSU is the only public liberal arts university in the state. The campus holds an undergraduate enrollment of approximately 5,600 students and a graduate student enrollment of approximately 250. More females attend the university, with a male-to-female ratio of 42:58. This is similar to state and the national averages of male-to-female college enrollment. The university maintains a student-to-faculty ratio of 16:1 and an average class size of 24 students. There is a strong Greek presence on campus, with about 18% of women and 20% of men involved in a sorority or fraternity. Because of Kirksville's size (population 17,000), most students (95%) live on campus or within walking distance to campus (TSU, 2010).

High-Risk Drinking Among College Students

High-risk drinking among college students has been identified as one of the major health risks among college students aged 18-24 (O'Malley & Johnston, 2002). In 2002, an NIAAA task force analyzed five different sources of data, including the National College Health Risk Behavior Survey, to estimate recent levels of alcohol consumption by college students. In this comprehensive report, researchers found that approximately 4 out of 5 college students reported alcohol consumption; and about 50% of these students reported engaging in binge drinking, one common type of high-risk drinking (O'Malley

& Johnston, 2002). Binge drinking is defined as a pattern of drinking that brings blood alcohol concentration to 0.08 gram percent or above. For the typical adult, this pattern corresponds to consuming five or more drinks for a male and four or more drinks for a female in about two hours. Although binge drinking is defined by the number of drinks in a certain amount of time, this is not actually what students define as problematic. Students define problem drinking in terms of negative outcomes (and sometimes frequency) rather than in terms of quantity. Also, they often assign negative connotations to the term *binge* (Goodhart, Lederman, Stewart, & Laitman, 2003).

Binge drinking rates are higher among young adults than any other age group (Baer, 2005), and college students exhibit the highest frequency of binge drinking (Baer, 2005; O'Malley & Johnson, 2002). Binge drinking in college seems to be heavily influenced by contextual, personal and social factors that appear often in the first few years of college. This was demonstrated when freshmen at a large university were analyzed concerning their past two weeks' binge drinking, their high school binge drinking, and psychosocial factors related to drinking. The results indicated that binge-drinking behavior can be predicted based on environments in which partying and socializing occurs. Additionally, personality characteristics such as impulsiveness, behavior under-control, and risk-seeking were also associated with binge drinking among young adults (Beck, Thomas, Mahoney, & Fingar, 1995).

Binge drinking has been associated with a higher risk of negative consequences, such as physical and sexual assault, alcohol poisoning, unsafe and unplanned sexual

activity, sexual harassment, impaired study time, and interpersonal problems (NIAAA, 2004). The National College Health Risk Behavior Survey, which is conducted yearly on over 550 college campuses across the US, indicated that in 2010, 21% of students had consumed more than five drinks in one sitting between one to two times in the last two weeks. The survey also revealed that almost 16% of students had consumed seven or more drinks during the last time that they had socialized or partied (NIAAA, 2004).

Knight et al. (2002) also studied the prevalence of alcohol use and dependence among college students in the US. Over 14,000 students in 119 universities responded to a survey that included questions that corresponded to the DSM-IV-TR diagnostic criteria for alcohol abuse and dependence. Thirty-one percent of the students surveyed indicated a positive diagnosis for alcohol abuse, and 6% indicated a diagnosis of alcohol dependence in the past 12 months (Knight et al., 2002).

High-risk drinking, such as binge drinking and alcohol abuse, seems to peak during late adolescence and early adulthood. Therefore, the years following high school may be particularly risky because younger college students have higher rates of alcohol use and heavy drinking than their older peers (Sutfin et al., 2009).

High-risk drinking can be spawned by drinking games, which are a specific social interaction that is very common among college students. These games have been described as competitions between drinkers with rules that encourage a large amount of alcohol to be consumed in a short amount of time (i.e. binge drinking). Individuals who

participate in drinking games consistently reported greater levels of drinking as well as more alcohol-related negative consequences (Ham & Hope, 2003).

There are also several particular college groups that engage in high-risk drinking more often than their counterparts, including athletes, Greeks, and White males. In a seminal study, the Harvard School of Public Health found that although student athletes and students in a fraternity or sorority are exposed to more alcohol education programs than any other population in the student body, they actually have a greater frequency of high-risk drinking behaviors such as binge drinking. Research has revealed that athletes and Greeks drink more frequently and more often to the point of intoxication than their non-athlete counterparts (Leichliter, Meilman, Presley, & Cashin, 1998; Weschler, Molnar, Davenport, & Baer, 1997).

In addition researchers found that White males who attended a four-year college were more likely to engage in high-risk drinking compared to Black and Asian male student (Paschall et al., 2005). Florida State University researchers found that White male students drank alcohol more than four days a month on average, whereas Black male students drank alcohol fewer than three days a month (“News and Views,” 2004).

Although males have reported higher drinking rates and suffer more from alcohol-related consequences, recent research has indicated that female college students are also at an increased risk for alcohol-related consequences. The number of young adult women labeled as heavy binge drinkers has increased significantly over the past decade (O’Malley & Johnson, 2002). For example, women who are in a sorority report higher

rates of drinking than women who are not affiliated with a sorority. Sixty-two percent of sorority members reported engaging in heavy drinking, compared to 41% of other female students (Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, 2008).

In addition, inherent biological differences cause females to experience the effects of intoxication at lower levels of BAC than males. Women can typically reach the same BAC level without drinking as much as men due to the differences in alcohol absorption into the bloodstream between genders. Differences in weight, fat-to-muscle ratio, and biological processing can make it possible for a female's BAC to be the same or even more than a male's without drinking as much as a male. This difference in BAC between genders is heightened with the recent phenomenon of female drinkers purposefully restricting caloric intake before heavy drinking in order to control her body weight. For example, many college-aged females will restrict what they eat or purge what they have already eaten to create "calorie room" to binge drink. This disturbing trend has not been formally researched, but current statistics indicate that 30% of women with alcohol-related problems also have an eating disorder (Frederikson, 2011). This increase in reported drinking, the relationship between alcohol and eating disorders, and the physiological vulnerability of females has created a need for universities to target interventions toward the female population as well as the males (Thandani, Huchting, & LaBrie, 2009).

Negative Consequences of High-Risk Drinking

Negative outcomes resulting from high-risk drinking affect many U.S. college campuses. These consequences affect not only the college students, but also the surrounding community and students who choose not to drink. Consequences from college drinking are wide-ranged and include, injury, assault, sexual assault, unsafe sex, health problems, suicide attempts, drunk driving, vandalism, police involvement, and death (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; Hingson, Zha, & Weitzman, 2009). Other problems related to the college drinking experience may include a reduction in classroom performance, poor grades, difficulties in residence hall management, and destruction of property. Additionally, administrators believe that alcohol consumption is involved in damage to residence halls, emotional distress of students, violent behavior, and violation of campus policies (Reed, Prado, Matsumoto, & Amaro, 2010).

Death

The most severe consequence of high-risk drinking is death. Among college students between the ages of 18 and 24, approximately 1,800 will die per year because of alcohol-related unintentional injuries, including motor vehicle crashes (Hingson et al., 2009). According to the National Highway and Safety Administration (2008), 13,470 people were killed in crashes in 2007 involving a driver who was impaired with alcohol, which is defined as a having a blood alcohol concentration of .08 or higher. Other alcohol-related deaths among college-age students include falls, fires and burns,

drowning, suicide and alcohol poisoning. Alcohol is involved in 21-48% of falls that are fatal and is often due to the lack of coordination and balance that occurs when under the influence. Water-related activities such as boating, water-skiing, fishing, and even swimming are often associated with the use of alcohol. Drowning is the third leading cause of accidental death in the US, and studies suggest that individuals who are involved in these accidents are more likely to be intoxicated (CDC, 2010). After drowning, death from fires and burns are the fourth leading cause of accidental death in the US. In particular, fires caused by cigarettes are significantly correlated to alcohol use (CDC, 2010).

Furthermore, deaths from alcohol poisoning are of particular concern because of the large amounts of alcohol consumed by college students in a short amount of time. Alcohol poisoning occurs when drinking too much, too quickly affects the breathing, heart rate and gag reflex of the drinker potentially causing coma or death. Since 1996, at least 84 students in the US have died from alcohol poisoning, but the total deaths from alcohol poisoning may be much higher due to a lack of correct reporting (Hingston et al., 2002).

For example, Adrian Heidman, an 18-year-old student at California State University, died in October of 2003 with a blood alcohol level of 0.37%, which is nearly five times the legal limit for drivers. His mother, who said he rarely drank, was surprised to learn that he was seen that night guzzling blackberry brandy at a Pi Kappa Phi celebration where he had recently pledged. He fell asleep that night; and when his

friends came to check in on him, he had already stopped breathing (Woolston, 2000). Other instances of death as a result of high-risk drinking include an Illinois University fraternity member dying from alcohol poisoning, a Cornell University student falling down a gorge, and a female Colorado College student falling 42 feet out of her open dorm room window (Cada, 2004).

Intentional death due to the influence of alcohol includes suicide and homicide. Lamis, Malone, Langhinrichsen-Rohling and Ellis (2010) indicated that drinking alcohol puts college students at an increased risk for suicidal behavior. Alcohol is also positively related to depression. Because depression is a risk factor for suicidal behavior, the use of alcohol while feeling depressed exacerbates the risk for suicidal behavior (Lamis, et al., 2010). Of all emergency department visits for drug-related suicides, alcohol was present in 39% of all the cases (Substance Abuse and Mental Health Services Administration, 2009).

Homicides are a second form of intentional death that is strongly influenced by alcohol. Pihl (2003) found that 50% of homicides occur while the perpetrator is under the influence of alcohol. The decrease in the ability to self-monitor is partially responsible for this kind of aggressive behavior, allowing individuals to act inappropriately and often violently. These aggressive and deadly behaviors might not occur if the individual is not under the influence of alcohol (Pihl, 2003).

Injury

Injury is the leading cause of death in Americans between the ages of 1 and 44. Annually, as many as 500,000 college students are unintentionally hurt or injured while under the influence of alcohol (Ham & Hope, 2003). Furthermore, a large number of those injured every year have high levels of alcohol in their blood. This is often due to individuals engaging in riskier behaviors, such as not wearing a seatbelt or motorcycle helmet. Alcohol is also known to decrease balance and coordination, increasing the risk for injury (CDC, 2011). The American College of Surgeons (2006) stated that alcohol is in some way related to 30–50% of all traumatic injuries, and clinicians in acute care centers also recognize alcohol as a significant cause of minor injury (MacLeod & Hungerford, 2011). The most common type of non-fatal injury is from falling. Alcohol is involved in 17-53% of nonfatal falls, and those who are over the legal BAC limit increase their risk of falling by 60% (CDC, 2011).

Many students are injured in other ways while under the influence of alcohol, including physical violence and motor vehicle crashes. Over 600,000 students are hit or assaulted by drinking peers every year (Ham & Hope, 2003), and about half of all unintentional injuries occur during motor vehicle crashes. It is estimated that seven percent of all crashes involve alcohol. Among those who visit the emergency room due to motor vehicle crash injuries, approximately 30% of drivers have a BAC of 0.10 or higher (CDC, 2011).

Sexual Assault

Each year, approximately 696,000 students between the ages of 18 and 24 are assaulted by students who are intoxicated; and 97,000 are victims of sexual assault or date rape. More than 100,000 students reported that they were too intoxicated to remember if sex was consensual. Of students who had consensual sex while under the influence of alcohol, 400,000 students reported having unprotected sex (Hingson et al., 2009).

Drug-induced sexual assault is another health issue linked to alcohol. Sexual assault predators often hide illicit sedative drugs in alcoholic beverages. Women are especially at risk for this type of assault. According to Schwartz and Weaver (1998), when the drug is “surreptitiously added to fruit drinks served to unsuspecting young women, Rohypnol produces profound sedation and reduces the will to resist sexual advances” (p. 321). The drug’s package insert is quoted as stating, “Some patients may have no recollection of any awakenings during the six to eight hours during which the drug exerts its action” (Schwartz & Weaver, 1998, p. 321). Law enforcement agencies consider this to be a grave problem, but because this sedative drug causes blackouts, implications for prosecution are grim (Suam & Inciardi, 1997).

Legal Implications

Many students engaging in high-risk drinking also become involved in negative actions that involve police or breaking the law. In fact, about 5% of students have problems involving police or campus security because of drinking alcohol (Wechsler et

al., 2002). Additionally, an estimated 110,000 students are arrested each year for public drunkenness, driving under the influence, or other alcohol-related violations (Hingson et al., 2002). In addition, 24% of college students who drink admitted to driving after consuming alcohol, and 11% of students who drink also self-reported that they had vandalized a property while under the influence of alcohol. This statistic was confirmed when 1 in 4 school administrators reported that their schools had moderate to major problems with alcohol-related property damage (Wechsler et al., 2002).

Academic Issues

Academic progress is also negatively impeded when students engage in high-risk drinking. McGee and Kypri (2004) concluded that the consumption of alcohol represented a potential impairment to students' immediate health and academic performance. A startling and seminal study by Anderson and Gadaletto (1985), revealed that almost 30% of academic failure and 21% of student dropouts can be attributed to alcohol-related behavior (as cited in Baer, 2005). In one study concerning alcohol and substance abuse patterns, seven percent of the freshman students who were identified as having substance abuse problems had withdrawn from school by the end of their first year (Bergen-Cico, 2002). Furthermore, Wechsler et al. (2002) found that approximately 1 in 4 students reported missing class, falling behind in studies, performing poorly on exams or papers, and receiving lower grades overall as a result of alcohol intoxication.

Cognitive and Emotional Development

Alcohol can also have a negative effect on brain functioning. In a study of young adult drinkers, researchers found that the participants had impaired executive cognitive functioning during even minimal social drinking (Lyvers & Tobias-Webb, 2010).

Executive cognitive functioning includes a number of cognitive abilities such as attention, abstract reasoning, organization, mental flexibility, planning, self-monitoring and the ability to use external feedback to moderate personal behavior. These abilities are essential for high-level functioning, but are significantly impaired when drinking (Pihl, 2003). For example, when executive cognitive functioning becomes impaired, a student might drink more than originally planned because of the decreased ability to self-monitor. Another example is a student who does not stop drinking, even when her friends tell her to do so. This student has a decreased ability to use external feedback from her friends to moderate her behavior, and therefore continues to drink despite her friend's warnings (Pihl, 2003).

The effects of alcohol on executive cognitive functioning begin as soon as an individual starts to drink alcohol. However, these negative cognitive effects last through the process of becoming sober, which is often longer than most people realize. This means that even if the effects of the alcohol seem to be fading and the individual "feels" more sober, executive cognitive functioning can still be significantly impaired. These lasting effects make it unsafe for the individual to drive or make important decisions, even hours after they have stopped drinking (Pihl, 2003). Eventually, cognitive

functioning returns to normal levels, although the exact time of full recovery is still yet to be determined. The exception to this return to functioning is with chronic alcohol abuse and alcoholism when cognitive functioning can be permanently impaired (Fitzpatrick, Jackson & Crowe, 2008).

High-Risk Drinking Reduction Strategies

The high number of alcohol-related consequences on campuses has caused colleges and surrounding communities to question the responsibility of educational institutions to manage the negative behavior among students (Brower, 2002). Wechsler and colleagues (1999) warned that schools with weak drinking rule enforcement put students at greater risk. Enforcing rules, especially for lower classmen, can help reduce the risk of alcohol-related consequences and help protect nondrinkers and students who drink responsibly (Baer, 2005).

In order to combat the negative consequences associated with high-risk drinking among college students, universities across the country have focused on a wide variety of programs. For example, the Bacchus Network (n.d.) is a non-profit community and university-based group focused on comprehensive health and safety initiatives on college campuses and the surrounding community. Its initiatives range from reducing negative gambling behaviors to increasing seat-belt usage. However, the primary initiative of the Bacchus Network focuses on training peer educators to deliver intervention strategies aimed at reducing the harmful effects of alcohol consumption. The Bacchus Network has

more than 32,000 student leaders reaching over 8 million peers on 1,000 college campuses around the world (The Bacchus Network, n.d.).

The Bacchus Network's philosophy is that student leaders can play a uniquely effective role by encouraging their peers to develop responsible habits concerning alcohol, such as designating a driver. The network has highlighted several programs from participating universities that focus on reducing the negative consequences caused by alcohol. For example, Ohio University has a program called "Kickin It In Lindley," presented by the campus group called "P.O.W.E.R." (Promoting Ohio University Wellness, Education and Responsibility). The program addresses high-risk drinking and promotes collaboration and conversation between students. The program is held two evenings per semester in the Cultural Center, where students can congregate, socialize, and obtain free food between the hours of midnight and 3 a.m. It provides a safe place for students to socialize and have fun without drinking. The event also has an information table on low-risk drinking. Students network and socialize while listening to music, playing board games, or participating in crafts. The program has been very successful, with over 300 students attending the inaugural event (The Bacchus Network, n.d.).

In addition, the University of Virginia (UVA) holds an annual 5K race called the "Fourth Year 5K." The race is held near the end of the football season (in November) and is intended to bring awareness to an unhealthy pattern of drinking prior to and during home football games. This high-risk drinking is referred to as the "fourth year fifth"

tradition, during which seniors attempt to drink a fifth of liquor the day of their last home football game (UVA, 2010 p.1). This practice resulted in the death of a UVA student in 1997, so the race brings an unhealthy drinking issue to the forefront every year and is still growing in popularity in its 20th year. According to the director of the Center for Alcohol and Substance Education, self-report surveys have indicated a decline in the number of students who are participating in the fourth-year fifth drinking binge over the past few years (UVA, 2010).

Other school approaches are strictly focused on educating the student body about the negative consequences of alcohol. At California State University, known for its legacy of academic quality, administrators were concerned at the recent reputation of being a “party school.” After the initiation of two educational ad campaigns about the consequences of high-risk drinking (“Wanna Know” and “Did You Know”), research indicated that there was a statistically significant decrease in blood alcohol levels from .068 to .056 in two years (Brown, 2004). However, other studies have indicated that education alone does not reduce alcohol intake. Thandani et al. (2009) examined the role of alcohol knowledge in a multi-component intervention that had previously shown a reduction in first-year female college drinking behavior. Intervention students outperformed control students on the measure of alcohol knowledge, but alcohol knowledge did not predict drinking outcomes for this group. These findings suggest that although there was an increase in alcohol knowledge, it was not the factor that ultimately reduced drinking behavior.

Other universities take a more hands-on approach to their college drinking intervention plans. For example, the Syracuse University S.A.P.H.E. (Substance Abuse Prevention and Health Enhancement) group creates a mini obstacle course on campus for students to drive through in a golf course while wearing Virtual Intoxication Goggles. The goggles slightly distort the vision and the location of objects, demonstrating how alcohol may impair a person's ability to drive or park a vehicle. Additionally, Reedley College uses a visually appealing approach to help students make a promise not to drive after drinking. The Substance Abuse Awareness Committee on campus displays an evergreen tree in the cafeteria, where students can make a pledge not to get behind the wheel of a car if they have been drinking. When making the pledge, each student gets to hang a key on the branches of the tree (The Bacchus Network, n.d.).

A few college campuses require that students refrain from any alcohol consumption by enforcing a zero tolerance policy to reduce the negative impact of alcohol on students. For example, according to the Report of Institutional Compliance with the Drug-Free Schools and Communities Act, Brigham Young University's (BYU) policy requires students and employees to refrain from possessing, serving, or consuming alcohol as a condition of enrollment or employment (BYU Drug Free Schools Report, 2008).

BYU is one of many college campuses that heralds complete abstinence as the most effective way to mitigate negative consequences from alcohol. However, encouraging behaviors that could protect students from alcohol-related negative

consequences without completely abstaining from drinking alcohol may also be effective in reducing harm. These alcohol-related protective behaviors employed by a college student may range from traveling in groups (e.g., to a bar or party) to watching an alcoholic drink being made. Encouraging the use of such alcohol-related protective behaviors may particularly help college students who may not otherwise respond to traditional intervention efforts (Fromme & Orrick, 2004). Therefore, creating messages that promote harm-reducing behaviors can become an effective part of a comprehensive alcohol-intervention program on college campuses (College Drinking Prevention, 2010a). In addition, understanding the use and frequency of alcohol-related protective behaviors can help health educators plan, implement and evaluate more effective health communication messages targeting alcohol use among college students. In turn, these types of interventions may help reduce binge drinking and alcohol-related negative consequences among college students.

To effectively plan and implement programs on campuses that utilize the promotion of alcohol-related protective behaviors, campus health educators can rely on a comprehensive theoretical framework that utilizes a variety of influences to help support the planning process.

Social Cognitive Theory

Alcohol education and risk-reduction programs are being established all over the country; however, there is no single program that works for every campus, and there are no studies that confirm which method is best for all students. Drinking tendencies among

college students tend to vary greatly, therefore suggesting a “one size fits all” intervention is less likely to succeed. Schools continue to use models based on different methods of encouraging behavioral change (Ray, Turrisi, Abar, & Peters, 2009).

Health promotion programs often lack a clearly specified theoretical foundation, or are sometimes based on a limited model. For example, lifestyle modification programs, like smoking cessation or weight loss programs, are often based on an individually focused behavior change strategy while ignoring the vast environmental influences of health and illness (Stokols, 1996). However, with an issue like high-risk drinking among college students, a more comprehensive approach (one that includes the environment and social interactions) can be used to reap more successful intervention outcomes.

Banduras’ (1986) Social Cognitive Theory (SCT) provides a comprehensive and well-supported conceptual framework for understanding the factors that influence health behavior and the processes through which health education and health behaviors interventions can be designed (McAllister, Perry, & Parcel, 2008). SCT can also offer insight into the adoption and use of alcohol-related protective behaviors among college students, particularly the concepts of reciprocal determinism, outcome expectations, self-efficacy, observational learning, incentive motivation, and facilitation. These concepts can help health educators better understand alcohol-related protective behaviors and provide guidance on how to plan more effective health education and health behavior interventions.

Reciprocal Determinism

Reciprocal determinism is one of the most important SCT concepts because it can explain behavior from multiple angles. Reciprocal determinism is the dynamic interaction of the person, the behavior, and the environment in which the behavior is performed (McAllister et al., 2008). The environment includes factors that are physically external to the person, such as the setting of a bar, party, or fraternity house and can be very influential in encouraging or discouraging a behavior. For example, if a student goes to a bar that participates in a program which provides free non-alcoholic drinks to designated drivers, the student in that environment is more likely to refrain from drinking (McAllister et al., 2008).

But environment is not the only way to influence behavior. Behavioral capability and reinforcement can also be used to describe a student's actions. Behavioral capability is the concept that people perform a behavior based on their knowledge of the behavior and their skill to perform it (McAllister et al., 2008). This means that if a student is given the knowledge and skills to perform an alcohol-related protective behavior, such as hanging out with people who drink more slowly, she is more likely to repeat this behavior.

Reinforcement is another predictor of behavior. It is the response to a person's behavior that increases the likelihood that he will repeat that behavior. Reinforcement in social groups can be very effective in encouraging a healthy behavior such as getting a designated driver. For example, if members of a fraternity are consistently praised by

their leaders when they choose to use a designated driver, the chance of using a designated driver will increase in subsequent events (McAllister et al., 2008).

Outcome Expectations

A number of psychological determinants of behaviors have been identified in SCT. The first of these psychological determinants of behaviors is outcome expectations, which are beliefs about the likelihood of an outcome that could result from the behavior a person chooses to perform (McAllister et al., 2008). A student will perform a behavior to maximize benefits and minimize risks. In a situation during which a student must decide whether to engage in an alcohol-related protective behavior, he or she will weigh the physical and social costs of the behavior against the benefits of the behavior. For example, if a student is trying to decide whether to ride with a driver who has been drinking, he must weigh the benefits and the costs. He might come to the conclusion that the benefits of refusing to ride with an intoxicated driver, such as getting home safely, outweigh the social costs of being teased or pressured by peers. Outcome expectations are interesting because they are based on people's *perceptions* of cost and benefit as well as the capacity of foresight (McAllister et al., 2008). Foresight will make it possible for this student to visualize the benefit of arriving home safely in the future versus the cost of social implications in the present. This is especially important when planning interventions based on encouraging alcohol-related protective behaviors because the intervention must focus on the benefits of participating in that behavior so that students

can readily recall these benefits and gain the foresight needed to make healthy decisions (McAllister et al., 2008).

Self-efficacy

A second psychological determinant in SCT is self-efficacy. Self-efficacy is the concept for which SCT is most widely known and consists of a person's beliefs about his or her capacity to affect the functioning and quality of the events that affect his or her life. In essence, a student will perform an alcohol-related protective behavior, such as watching her drink being made based on her belief in her ability to perform that behavior. Studies have indicated that the performance of many types of behavior is determined by outcome expectancies and self-efficacy (McAllister et al., 2008). However, self-efficacy becomes more important as the desired behavior becomes more complex or difficult. For example, a female student may feel confident in her ability to watch her drink being made, but it may take more self-efficacy to set and stick with a certain time to leave the party or bar as this behavior involves more people and can be more difficult when under the influence of alcohol. Health education program planners on college campuses can embrace the importance of self-efficacy when planning health education and health behavior interventions for promoting alcohol-related behaviors by highlighting how easy the behaviors are to accomplish. This may include making designated driver programs available for free with an easy-to-remember phone number to call to make arrangements for pick-up. The easier a behavior appears and the more often a student engages in that

behavior, the more self-efficacy a student will have to perform that behavior for the first time as well as repeat it again in the future.

Observational Learning

Humans have an exceptional capacity for observational learning, which is learning a behavior from witnessing another person performing the desired behavior (McAllister et al., 2008). Many studies have shown that people are imitated most frequently when observers perceive the people as similar to themselves. This makes peer modeling a well-recognized method for influencing the behavior of others. Peer modeling can help students gain self-efficacy for new behaviors, such as telling friends where they are going out. On campus, peer educators can be used to model alcohol-related protective behaviors to other students while actually in the drinking environment. For example, a group of peer educators on campus could be working toward encouraging other students to set a leaving time prior to going out by modeling this behavior every time they were planning on participating in a drinking environment. The act of peer modeling may appear insignificant, but it can be very influential on the population, especially with influential, informal leaders within peer groups (McAllister et al., 2008).

Incentive Motivation and Facilitation

SCT includes concepts to describe the powerful influences of environment on behavior. It hypothesizes that no amount of observational learning will lead to behavior changes unless the observer's environment is supportive of the new behaviors. Two approaches for influencing behavior through environmental change are incentive

motivation and facilitation. Incentive motivation provides a student with a reward or punishment for desired or undesired behaviors. This might include the incentive of free non-alcoholic drinks for students who choose not to consume alcohol at participating establishments, much like the CHEERS program in college towns around Missouri. Or, it might include the risk of punishment, such as being put on academic or athletic probation, or being arrested for public intoxication or driving under the influence. The concept of facilitation is an environmental change that provides new structures or resources (McAllister et al., 2008) such as pamphlets on how to identify if a friend has alcohol poisoning and what to do in that circumstance.

Multilevel approaches led by SCT may be essential in improving alcohol-related consequences on U.S. campuses. SCT is frequently used for planning university health interventions because of the strong personal, behavioral, organizational, and community factors. These organizational and community factors include the Greek population, class identities (Freshman, Sophomore, etc.), large informal social groups, organized student associations, and students who are actively engaged in the surrounding community through family, friends, and jobs (McAllister et al., 2008). Several intervention models can be used to mobilize these organizational and community factors, but one in particular is well-suited for promoting alcohol-related protective behaviors: the 3-in-1 framework.

3-in-1 Framework Interventions

The 3-in-1 framework is a comprehensive and integrated approach that includes (a) individuals, (b) the college and surrounding community, and (c) the student

population. This multivariate approach has been dubbed the *3-in-1 framework* and focuses on each of the three areas simultaneously to produce the clearest change (College Drinking Prevention, 2010b).

Individuals

A crucial part of an integrated alcohol-related intervention on a college campus is assisting individual students who have been identified as at-risk, alcohol-dependent drinkers. Strategies to engage these students include early screening and intervention services. This may be on campus, or the student may be referred to outside facilities for assessment and treatment. One example of a nationwide effort to increase screening is National Alcohol Screening Day, supported by the NIAAA and the U.S. Substance Abuse and Mental Health Services Administration. This program takes place in April of each year and provides anonymous mental health and wellness screenings as well as health information on numerous college campuses (College Drinking Prevention, 2010b).

Another example of an individual intervention strategy is the use of motivational interviewing as a brief alcohol intervention for college students to increase their willingness or motivation to change, reduce alcohol use and related problems and increase engagement in protective behaviors. The main goal of motivational interviewing is to help the student create his or her own genuine argument for behavior change, based on Prochaska's Transtheoretical Stages of Change Model. To do this, motivational interviewing integrates specific interview strategies and a client-centered approach. One specific motivational interviewing program called BASICS has been recognized by the

Substance Abuse and Mental Health Services Administration as a model program for its effectiveness in several randomized controlled trials. However, this individual approach has not been evaluated as a stand-alone intervention. Motivational interviewing is typically combined with community and school interventions as part of a comprehensive approach (Tollison, 2010).

Although individual approaches aimed at curbing high-risk drinking can be useful, the risk for alcohol-related problems exists along a continuum of behaviors. Therefore, targeting only individuals who have reported dependency problems will alienate or overlook individuals who only occasionally drink heavily and do not indicate being at risk through typical screening processes. In fact, most alcohol-related consequences are caused by nondependent heavy drinkers, who may not have been screened as at-risk or self-identified as problem or high-risk drinkers (Baer, 2005; Lemmens, 1995).

College and Surrounding Community

Moving beyond interventions at the individual level to include interventions that are reinforced from the college to the surrounding areas can increase scope and influence (Hingson & Howland, 2002). Gaining community buy-in by presenting the problem as a community issue as well as a college issue can help assure the support of the community leaders. Interventions that are mutually supported and reinforced can help change the broader environment that a college student is exposed to on a regular basis. This joint effort typically results in public policy and enforcement reforms that change the

landscape of drinking environments. It can also aid in helping student affairs, local drinking establishments, and law enforcement work together to solve student-drinking problems (Hingston & Howland, 2002).

A great example of the community working together with the college campus to reduce negative alcohol-related consequences is in Champaign, IL. In Champaign, home of the University of Illinois, local law enforcement has conducted a successful campaign in the area to help reduce the overconsumption of alcohol by enforcing happy hour and drink special laws. Champaign has a large population of students from the University of Illinois as well as the local community college. The Champaign's police department's Alcohol Enforcement Unit has focused their efforts on bars that reduce the price of alcohol at certain times of the day as well as advertise for drinking contests. Bar advertisements are reviewed daily and follow-up observational visits identify possible violations. When violations occur, the unit notifies the bar owner of the need to correct the issue. An undercover investigator will follow up to assure that the violation was corrected. If it has not been corrected, further action is taken in the form of a fine or the revocation of the establishment's liquor license (National Highway Traffic and Safety Administration, 2005).

Another program that encourages colleges and the surrounding communities in Missouri to work together to reduce drunk driving is the CHEERS to Designated Drivers program. This program provides free non-alcoholic drinks to students who have committed to being the designated driver for the night. Establishments that serve alcohol

in the college community are asked to participate in the program. In return, the establishments are placed on a CHEERS wallet card that is given out to students. Students can easily see which establishments offer free non-alcoholic drinks to designated drivers and are more likely to visit the participating restaurants and bars. Since the inception of the program, 274 establishments are currently participating in college communities in Missouri. Although no formal studies have been conducted to establish the direct outcome this program has on alcohol-related consequences, several of the college communities have seen a reduction in student arrests for drunk driving (CHEERS, n.d.).

The Student Population

At a level in between the individual and the community is the student population. Addressing factors that encourage high-risk drinking behaviors in the student population is a pivotal aspect of effective campus-based health education and health behavior interventions. Specific strategies to target high-risk behaviors vary by school, but typically encompass five key areas (College Drinking Prevention, 2010b):

1. The availability of alcohol to underage or intoxicated students - this includes the ability to obtain alcohol with a fake I.D. or the ability to ask a person of age to purchase for underage drinkers. More severe punishment for establishments that sell alcohol to minors can help reduce the availability of alcohol to underage drinkers.

2. Aggressive social and commercial alcohol promotion to students and others in their age group - ad campaigns on television, radio, and billboards can be particularly convincing to college students. Students feel even more pressure when alcohol is aggressively suggested by members of a social group, such as a fraternity or sorority members, teammates, or roommates.
3. Large amounts of unstructured student free time - a lack of on-campus programming can lead to an increase in student drinking because other non-drinking options are limited.
4. Inconsistent laws and campus policies - campus policies that are the same as community laws have an increased chance of reducing drinking, as students receive clear and consistent policy-based messages from both places.
5. Student perceptions of heavy alcohol use as the norm - the social acceptance of drinking as a normal part of college life encourages students, who might otherwise choose not to drink, to engage in social drinking.

College campuses are attempting to deal with high-risk drinking among students by utilizing interventions focused on these five key areas. Researchers and health educators recently have begun using the concept of students' social perceptions to develop interventions that promote healthier behaviors as the norm. A social norm is the belief that most of the population adheres to a certain idea or behavior (College Drinking Prevention, 2010a). Promoting alcohol-related protective behaviors is part of a comprehensive intervention plan that uses social norms to help students change their

perspective on their behavior. One example of a social norm message might be, “Eighty-five percent of Truman Students designate a driver when going out drinking.” Rather than trying to completely eliminate binge drinking and other high-risk drinking behavior, harm-reduction approaches such as social norm messaging focus on promoting alcohol-related protective behaviors to reduce or limit alcohol consumption and reduce the risk associated with negative consequences (Sutfin et al., 2009). Social norm messaging helps students get a clearer picture of what behaviors their peers are participating in which can help students feel as though they “fit in” with their peer group when they participate in the protective behavior. The student can engage in a desired behavior and still feel as though he or she is part of a social group (Haines, 2006).

Alcohol-Related Protective Behaviors

Howard, Griffin, Boekeloo, Lake, and Bellows (2007) examined alcohol-related protective behaviors in their qualitative study using college-student focus groups. College freshmen reported numerous coping strategies when attempting to keep themselves and their friends safe while consuming alcohol. The repertoire of coping strategies included “planning a safe context for drinking, using safety measures to minimize harm when drinking, and taking care of someone who has consumed too much” (Howard et al., 2007, p. 699).

In another qualitative study, Martens et al. (2005) identified three meaningful themes associated with alcohol-related protective behaviors: (a) limiting or stopping drinking, (b) manner of drinking (such as not participating in drinking games), and (c)

serious harm reduction (such as riding with a designated driver). These themes were significantly positively associated with both reduced alcohol consumption and lower frequency of alcohol-related problems (Martens et al., 2005). The perception of an alcohol-related protective behavior as either positive or negative can also affect the frequency of alcohol use by students. For example, Sugarman and Carey (2007) clustered strategies to control drinking into three themes: (a) selective avoidance of heavy drinking activities, (b) alternatives to drinking, and (c) strategies used while drinking. The participants negatively viewed the themes of selective avoidance of heavy drinking activities and alternatives to drinking. However, strategies used while drinking were viewed positively by the participants and were more often utilized. These included watching one's drink being prepared by a bartender and designating a sober driver (Martens et al., 2005).

Utilizing alcohol-related protective behaviors may help reduce the risk of minor consequences (e.g., reduced sleep) to serious consequences, such as sexual assault and motor vehicle crashes. For example, the alcohol-related protective behavior of watching one's drink can prevent another person from spiking the drink with an illicit drug like Rohypnol, thereby reducing sexual assault risk. Phoenix House (n.d.), one of the nation's leading nonprofit providers of substance abuse and treatment services, lists watching one's drink as one of the most important behaviors to employ while in drinking situations. However, more studies are needed to indicate whether this particular alcohol-

related protective strategy can be directly linked to a reduction in alcohol-related consequences.

According to Haines (2006), recent studies indicate that alcohol-related protective behaviors correlate with reduced negative choices, including driving while intoxicated. For example, the consistent use of a designated driver is an alcohol-related protective behavior that has been employed for decades and is known for reducing alcohol-related motor vehicle crashes. In the years between 1982 and 1992, when designated driver initiatives in the US were encouraged through innovative laws, widespread public service announcements, and the growth of organizations like Mothers Against Drunk Driving, fatal crashes from drunk drivers fell from 30% to 20% (Ayers & Drummond, 1994). Therefore, college students who employ this alcohol-related protective behavior can reduce their risk of being killed or injured in a motor vehicle crash.

Other alcohol-related protective behaviors that may reduce the incidence of harm, besides taking a drink directly from the bartender or designating a driver, include watching a friend's drink, choosing not to drink, hanging out with people who drink less or more slowly, traveling in groups in social drinking environments, telling friends of social plans for the night, knowing a friend's social plans for the night, and setting a predetermined time to leave the drinking environment (Haines, 2006).

Summary

The incidence of high-risk drinking among college students in the US is alarming (Baer, 2010). The data indicate that a lack of alcohol education and related interventions

can lead to an increased risk of high-risk drinking on U.S. college campuses. A review of literature demonstrates a significant and disturbing trend of alcohol-related consequences among college students in the US. These alcohol-related consequences range from academic problems to death. Current health education strategies used to combat alcohol-related consequences include increased awareness and education, alcohol-related policy enforcement, campus programming provided as an alternative to drinking, and promoting alcohol-related protective behaviors. Constructs from the SCT like reciprocal determinism and self-efficacy can be used to plan health education programs that reduce alcohol-related negative consequences. The 3-in-1 Framework is a stellar example of a health education program that uses concepts from the SCT to reduce alcohol-related consequences on campus.

Alcohol-related protective behaviors are behaviors that reduce the risk of alcohol-related negative consequences. Some examples of a alcohol-related protective behaviors include choosing to drink slowly, riding with a designated driver and watching your drink being made. These behaviors can be promoted as part of a comprehensive health education program like the 3-in-1 Framework to help health educators reduce alcohol-related negative consequences on college campuses in the US.

CHAPTER III

METHODOLOGY

The population for the original collection of data was a convenience sample of students enrolled in a required basic health class at TSU in 2007. These secondary data collected in 2007 were analyzed for use in the current study.

Human Participant Protection

The original survey data was collected anonymously from students by using implied informed consent with participation for the original data collection process. An exempt Institutional Review Board (IRB) application submitted to TWU for this study was approved, as the data used was considered secondary with no identifiable marks or names.

Study Instrument

Researchers employed by the Health and Exercise Science Department at TSU adapted survey questions from a significantly longer wellness instrument: the Protective Behavioral Strategies Survey used at the University of Missouri (Martens et al., 2005) (Appendix A). Permission to adapt and use the Protective Behavioral Strategies Survey was granted by Joan Masters at the University of Missouri Wellness Center (E. Masters, personal communication, September 25, 2007). The IRB at TSU approved data collection on September 10, 2007, and the data were collected during a 2-week timeframe in October 2007.

Sampling Procedures and Data Collection

Data were collected as students waited to receive a skin-fold test during their Lifetime Health and Fitness class time. Surveys were distributed directly to students and collected by the principal investigator immediately after student completion. Implied informed consent was obtained by having the student read the confidentiality notice on the front page of the survey. The survey had a total of 17 questions with a mix of single-answer, multiple-answer, and Likert-scale items. Only four questions were used for data analysis in this study. Questions 1, 5, and 6 are demographic questions concerning gender, Greek affiliation, and housing status. Question 15 is a Likert-scale item asking the frequency of nine alcohol-related protective behaviors: (a) choosing not to drink alcohol at all, (b) hanging out with people who drink less or more slowly, (c) watching drinks as they are prepared, (d) watching a friend's drink, (e) traveling in groups, (f) refusing to ride with a driver you know has been drinking, (g) setting a predetermined time to leave the party or bar, (h) letting a friend know where you are going out, and (i) making sure you know where your friends are at all times.

Two approved student workers employed by TSU entered individual surveys into SPSS v.15. Electronic data were then stored on a password-protected computer. No names or identifying marks were used on the survey to assure anonymity of the participants. This secondary data set was then analyzed for the completion of this study.

The survey data are available free of cost to the general public from a public computer located in Dr. Jerry Mayhew's office in the Department of Exercise Science at TSU.

Data Analysis

A quantitative analysis was used to assess the values in the secondary data set. To explore a factor structure for protective measures, exploratory factor analysis was performed on the data set. Multivariate analyses of variance (MANVOA) were conducted to test for differences on the protective drinking behavior items by gender, residence type, and Greek status. One-way analyses of variance were conducted to test for gender, residence type, and Greek status differences on the overall protective behavior score. A significance level of 0.05 was considered for all analyses.

CHAPTER IV

RESULTS

The purpose of this study was to analyze the use of alcohol-related protective behaviors reported by college students attending a Midwestern U.S. liberal arts university. The nine alcohol-related protective behaviors measured were: (a) choosing not to drink, (b) hanging out with people who drink less or more slowly, (c) watching drinks as they were prepared, (e) watching a friend's drink while he/she was gone, (f) traveling in groups, (g) refusing to ride with a driver you know has been drinking, (h) setting a pre-determined time to leave the party or bar, (i) letting a friend know where you are going out, and (j) making sure you know where your friends are at all times. Analysis on alcohol-related protective behaviors were performed by gender, Greek status (Greek or independent), and resident status. This chapter reports the results of the data analysis.

Demographics

Over 230 college students participated in the study. More females (70%) than males (30%) answered survey items. Most participants identified themselves as White (87%), followed by Asian (5.6%), Black (3.9%), Hispanic (3.9%), and multi-racial (1.3%). Most students (79.1%) identified as Independent, whereas 20.9% of students identified as Greek. The majority of students who participated in the study were also considered first-year students (53.2%), followed by second-year students (31.8%), third-year students (8.2%), and fourth-year students (6.9%). Most students also

reported living in a residence hall (75.5%), followed by an apartment (21%), a Greek house (1.3%), with family (1.7%), or other arrangements (.4%; see Table 1).

Table 1

Frequencies and Percentages of Demographic Categorical Variables

| | Frequency | % |
|----------------|-----------|------|
| Gender | | |
| Female | 159 | 70.0 |
| Male | 68 | 30.0 |
| Race | | |
| Asian | 13 | 5.6 |
| Black | 9 | 3.9 |
| Hispanic | 5 | 2.1 |
| White | 203 | 87.1 |
| Multi-Racial | 3 | 1.3 |
| Affiliate | | |
| Greek | 48 | 20.9 |
| Independent | 182 | 79.1 |
| Class | | |
| 1st Year | 124 | 53.2 |
| 2nd Year | 74 | 31.8 |
| 3rd Year | 19 | 8.2 |
| 4th Year | 16 | 6.9 |
| Resident | | |
| Residence Hall | 176 | 75.5 |
| Apartment | 49 | 21.0 |
| Greek House | 3 | 1.3 |
| With Family | 4 | 1.7 |
| Other | 1 | .4 |

Note. Frequencies not equal to 233 reflect missing data.

Mean participant age was 19 years, with a range of 17-25 (see Table 2).

Table 2

| <i>Means and Standard Deviations of Demographic Continuous Variables</i> | | | | | |
|--|-----|-------|------|-----|-----|
| | N | Mean | SD | Min | Max |
| Age | 232 | 18.95 | 1.12 | 17 | 25 |

Exploratory Factor Analysis

A quantitative analysis was used to assess the values in the secondary data set. To explore a factor structure for protective measures, exploratory factor analysis was performed on the data set. MANOVA were conducted to test for differences on the protective drinking behavior items by gender, residence type, and Greek status. One-way analyses of variance were conducted to test for gender, residence type, and Greek status differences on the overall protective behavior score. A significance level of 0.05 was considered for all analyses.

The nine alcohol-related protective behaviors measured in the MANOVA and one-way analyses of variance were: (a) choosing not to drink, (b) hanging out with people who drink less or more slowly, (c) watching drinks as they were prepared, (e) watching a friend’s drink while he/she was gone, (f) traveling in groups, (g) refusing to ride with a driver you know has been drinking, (h) setting a pre-determined time to leave the party or bar, (i) letting a friend know where you are going out, and (j) making sure you know where your friends are at all times.

The one-way analyses of variance analyzed the effect of gender, Greek status, and living situation on alcohol-related protective behaviors. The results indicated that gender ($p < .001$) and Greek status ($p = .002$) had a significant overall effect on alcohol-related protective behavior, whereas living situation ($p = .311$) did not have a significant overall effect on alcohol-related protective behaviors.

The MANOVA conducted on gender and the nine alcohol-related protective behaviors indicated that gender had a significant effect on five of the nine alcohol-related protective behaviors. Gender had a significant effect on watching drinks being made in that females had a significantly greater occurrence ($p = .028$) of watching drinks being made than males. Gender had a significant effect on watching a friend's drink in that females had a significantly greater occurrence ($p = .009$) of watching a friend's drink than males. Gender had a significant effect on traveling in groups in that females had a significantly greater occurrence ($p = .002$) of traveling in groups than males. Gender also had a significant effect on letting a friend know where you are going out because females had a significantly greater occurrence ($p < .001$) of letting a friend know where they are going out than males. Gender had a significant effect on making sure you know where your friends are at all times. Females had a significantly greater occurrence ($p < .001$) of knowing where friends were at all times than males. Gender had no significant effect on choosing not to drink, hanging out with slow drinkers, refusing to ride with a driver you know has been drinking, or setting a pre-determined time to leave the bar (see Table 3).

Table 3

Means and Standard Deviations of Alcohol Protective Behavior Items by Gender

| | n | Mean | SD | F | p |
|--------------------------|-----|------|------|-------|--------|
| Don't Drink | | | | .73 | .395 |
| Female | 154 | 3.75 | 1.12 | | |
| Male | 67 | 3.61 | 1.17 | | |
| Hang w/ Slow Drinkers | | | | .74 | .390 |
| Female | 154 | 3.49 | 1.08 | | |
| Male | 67 | 3.36 | 1.05 | | |
| Watch Drinks Made | | | | 4.91 | .028 |
| Female | 154 | 3.39 | 1.46 | | |
| Male | 67 | 2.93 | 1.37 | | |
| Watched a Friend's Drink | | | | 7.00 | .009 |
| Female | 154 | 3.36 | 1.48 | | |
| Male | 67 | 2.81 | 1.27 | | |
| Travel in Groups | | | | 9.64 | .002 |
| Female | 154 | 4.42 | .99 | | |
| Male | 67 | 3.99 | .90 | | |
| Refuse to Ride | | | | 2.23 | .137 |
| Female | 154 | 4.25 | 1.34 | | |
| Male | 67 | 3.96 | 1.42 | | |
| Set Leaving Time | | | | 1.87 | .173 |
| Female | 154 | 3.05 | 1.29 | | |
| Male | 67 | 2.79 | 1.24 | | |
| Let a Friend Know | | | | 21.81 | < .001 |
| Female | 154 | 4.25 | 1.06 | | |
| Male | 67 | 3.48 | 1.26 | | |
| Know Where Friends Are | | | | 16.27 | < .001 |
| Female | 154 | 4.11 | 1.01 | | |
| Male | 67 | 3.49 | 1.12 | | |

Note. Multivariate Summary: $F(9, 211) = 3.50, p < .001, \eta^2 = .130$.

The MANOVA conducted on Greek status and the nine alcohol-related protective behaviors indicated that Greek status had a significant effect on three of the nine alcohol-related protective behaviors. Greek status had a significant ($p = .002$) overall effect on alcohol protective behaviors. Greek status had a significant effect on deciding not to drink. Those who were classified as an independent had significantly greater occurrences ($p = .004$) of deciding not to drink than those affiliated with a fraternity or sorority. Greek status also had a significant effect on watching drinks being made in that those who were affiliated with a fraternity or sorority had significantly greater occurrence ($p = .012$) of watching their drinks being made than those who were classified as an independent. Similarly, Greek status had a significant effect on watching a friend's drink as those who were affiliated with a fraternity or sorority had significantly greater occurrences ($p < .001$) of watching a friend's drink than those who were classified as an independent. Greek status had no significant effect on choosing not to drink, hanging out with slow drinkers, traveling in groups, refusing to ride with a driver who has been drinking, setting a pre-determined time to leave the bar, letting a friend know where you are going out, or knowing where your friends are (see Table 4).

Table 4

Means and Standard Deviations of Alcohol Protective Behavior Items by Affiliation

| | n | Mean | SD | F | p |
|--------------------------|-----|------|------|-------|--------|
| Don't Drink | | | | 8.25 | .004 |
| Greek | 48 | 3.31 | .93 | | |
| Independent | 176 | 3.83 | 1.15 | | |
| Hang w/ Slow Drinkers | | | | .03 | .852 |
| Greek | 48 | 3.42 | .92 | | |
| Independent | 176 | 3.45 | 1.09 | | |
| Watch Drinks Made | | | | 6.45 | .012 |
| Greek | 48 | 3.71 | 1.30 | | |
| Independent | 176 | 3.12 | 1.46 | | |
| Watched a Friend's Drink | | | | 16.71 | < .001 |
| Greek | 48 | 3.92 | 1.01 | | |
| Independent | 176 | 2.99 | 1.48 | | |
| Travel in Groups | | | | 2.29 | .132 |
| Greek | 48 | 4.48 | .82 | | |
| Independent | 176 | 4.24 | 1.01 | | |
| Refuse to Ride | | | | 2.78 | .097 |
| Greek | 48 | 4.46 | 1.09 | | |
| Independent | 176 | 4.09 | 1.42 | | |
| Set Leaving Time | | | | 3.85 | .051 |
| Greek | 48 | 3.25 | 1.08 | | |
| Independent | 176 | 2.85 | 1.31 | | |
| Let a Friend Know | | | | 3.18 | .076 |
| Greek | 48 | 4.27 | .84 | | |
| Independent | 176 | 3.93 | 1.24 | | |
| Know Where Friends Are | | | | .29 | .589 |
| Greek | 48 | 4.02 | .96 | | |
| Independent | 176 | 3.93 | 1.11 | | |

Note. Multivariate Summary: $F(9, 214) = 2.98, p = .002, \eta^2 = .111$.

The MANOVA conducted on living situation and the nine alcohol-related protective behaviors indicated that living situation had no significant overall effect ($p = .311$) on any of the nine alcohol-related protective behaviors (see Table 5).

Table 5

| <i>Means and Standard Deviations of Alcohol Protective Behavior Items by Living Situation</i> | | | | | |
|---|-----|------|------|------|------|
| | n | Mean | SD | F | p |
| Don't Drink | | | | 4.07 | .045 |
| Residence Halls | 171 | 3.80 | 1.15 | | |
| Other | 56 | 3.45 | 1.04 | | |
| Hang w/ Slow Drinkers | | | | .01 | .932 |
| Residence Halls | 171 | 3.45 | 1.10 | | |
| Other | 56 | 3.46 | .95 | | |
| Watch Drinks Made | | | | 4.16 | .043 |
| Residence Halls | 171 | 3.14 | 1.46 | | |
| Other | 56 | 3.59 | 1.33 | | |
| Watched a Friend's Drink | | | | 7.71 | .006 |
| Residence Halls | 171 | 3.04 | 1.45 | | |
| Other | 56 | 3.64 | 1.34 | | |
| Travel in Groups | | | | .05 | .817 |
| Residence Halls | 171 | 4.29 | .96 | | |
| Other | 56 | 4.32 | 1.03 | | |
| Refuse to Ride | | | | 1.16 | .283 |
| Residence Halls | 171 | 4.09 | 1.44 | | |
| Other | 56 | 4.32 | 1.13 | | |
| Set Leaving Time | | | | .01 | .932 |
| Residence Halls | 171 | 2.95 | 1.28 | | |
| Other | 56 | 2.96 | 1.26 | | |

(continued)

Table 5 cont'd

| | n | Mean | SD | F | p |
|------------------------|-----|------|------|-----|------|
| Let a Friend Know | | | | .16 | .693 |
| Residence Halls | 171 | 4.00 | 1.21 | | |
| Other | 56 | 4.07 | 1.06 | | |
| Know Where Friends Are | | | | .01 | .938 |
| Residence Halls | 171 | 3.94 | 1.12 | | |
| Other | 56 | 3.93 | .95 | | |

Note. Multivariate Summary: $F(9, 217) = 1.18, p = .311, \eta^2 = .047$.

Summary

H1₀. There will be no significant difference between the self-reported frequencies of alcohol-related protective drinking behaviors of female students versus male students.

An analysis of variance indicated that there was an overall significant difference between female and male students regarding the use of alcohol-related protective behaviors. A MANOVA revealed that specifically, females used five of the nine alcohol-related protective behaviors more often than males. These alcohol-related protective behaviors used more frequently by females were watching their drink being made, watching a friend's drink being made, traveling in groups, letting a friend know where she is going out, and knowing where her friends were at all times.

H2₀. There will be no significant difference in the self-reported frequency of alcohol-related protective drinking behaviors between those who live in a residence hall, an apartment or house, or a fraternity or sorority and those living at home with a guardian.

An analysis of variance indicated that there was no overall significant difference in use of alcohol-related protective behaviors between those who live in the residence hall and those who live elsewhere.

H3₀. There will be no significant difference in frequency of self-reported alcohol-related protective drinking behaviors between those who identify as Greek and those who identify as Independent.

An analysis of variance indicated that there was an overall significant difference in the use of alcohol-related protective behaviors between those who identified as Greek and those who identified as Independent. A MANOVA indicated that those who classified themselves as Independent had a significantly greater occurrence of choosing not to drink. However, those who classified themselves as Greek had a significantly greater occurrence of watching drinks being made and watching a friend's drink.

CHAPTER V

DISCUSSION

The primary purpose of this study was to examine the frequency of the use of alcohol-related protective behaviors by college students at TSU. More specifically, this study was employed to analyze the use of alcohol-related protective behaviors as they related to gender, living status, and Greek or independent affiliation. College students attending TSU and enrolled in a basic health course served as the sample for this study. Upon volunteering to participate in the study, college students completed a paper survey adapted from a larger validated version from the University of Missouri. The first part of the survey was constructed to collect demographic data that included the following: age, gender, ethnicity, year in school, Greek or independent affiliation, and living situation. The remaining portions of the survey included questions concerning alcohol use, attitudes toward alcohol, attitudes toward non-alcohol and alcohol related activities, and the use of alcohol-related protective behaviors.

A total of 233 college student surveys were included in the data analyses. Based on the results of the study, gender and Greek status both had an effect on the occurrence of alcohol-related protective behaviors, whereas living situation had no effect on the occurrence of alcohol-related protective behaviors.

Conclusions

Relationship Between Gender and Alcohol-Related Protective Behaviors

An analysis of variance was computed to examine the relationship between gender and alcohol-related protective behaviors. The data indicated that there was an overall statistically significant difference in the occurrence of alcohol-related protective behaviors in males versus females, with women engaging in these behaviors significantly more than males. The null hypothesis (Ho1) was rejected. .

Relationship Between Greek Status and Alcohol-Related Protective Behaviors

An analysis of variance was computed to examine the relationship between Greek status and alcohol-related protective behaviors. The data indicated that there was overall a statistically significant difference in the occurrence of alcohol-related protective behaviors between those who identified as Greek and those who identified as independent. Specifically, independent students chose not to drink alcohol more often, whereas Greek students chose to watch their drink being made and watch a drink for a friend significantly more often than independents. The null hypothesis (Ho2) was rejected.

Relationship Between Living Situation and Alcohol-Related Protective Behaviors

An analysis of variance was computed to examine the relationship between living situation and alcohol-related protective behaviors. The data indicated that there was

overall no statistically significant difference in the occurrence of alcohol-related protective behaviors and living situations. The null hypothesis (Ho3) was accepted.

Discussion and Implications

The frequency with which students engaged in alcohol-related protective behaviors was based on the protective behavior item adapted from the Wellness Survey (used with permission from the University of Missouri). The items on this study's questionnaire asked respondents to recall the frequency with which they engage in particular alcohol-related protective behaviors. The frequency was measured in qualifiers of *never, rarely, sometimes, often, and always*. Based on the responses, data were compared to recent rates of similar alcohol-related protective behaviors as published in Walters et al. (2007), Delva et al. (2004), and Haines et al. (2006).

Gender

Alcohol-related protective behaviors utilized by females are especially important because females are more at risk for some particular alcohol-related negative consequences. Women can typically reach the same BAC level without drinking as much as men because of the different rates of alcohol absorption differences in body weight and body composition. This difference in BAC between genders is heightened with the recent phenomenon of female drinkers purposefully restricting caloric intake before heavy drinking in order to control body weight and feel the full effects of the alcohol (Frederikson, 2011). This increased intoxication can lead to unwise decisions, such as drinking and driving or going home with a stranger. Unsafe drinking practices along

with other female risk factors such as having her beverage spiked with a drug to lower her inhibitions, also increase her susceptibility to risks like sexual assault. In fact, college-aged women (aged 16-24) are at four times higher risk for sexual assault, and 55% of female students who were raped reported using alcohol or drugs prior to the incident (Roger Williams University, 2011). The Office on Women's Health in the U.S. Department of Health and Human Services (2008) recommended the following alcohol-related protective behaviors in order to protect women from being a victim of sexual assault through a date-rape drug:

- Don't accept drinks from other people.
- Open containers yourself.
- Keep your drink with you at all times.
- Don't share drinks.
- Don't drink from punch bowls or other common, open containers.
- If someone offers to buy you a drink at a bar, go with the person to order your drink. Watch the drink being poured and carry it yourself.
- Don't drink anything that tastes or smells strange.
- Have a nondrinking friend with you to make sure nothing suspicious happens.
- If you realize you left your drink unattended, pour it out.
- If you feel drunk and haven't drunk any alcohol—or if you feel like the effects of alcohol are stronger than usual—get help right away. (p.1)

In accordance with previous research (Walters et al., 2007), the current study supports evidence that female students engage in protective behaviors significantly more than their male counterparts. Although not a universal finding, female students in other studies of similar alcohol-related protective behaviors were more likely to keep track of the amount of alcohol they consumed, avoid drinking games, eat before or during drinking, and plan not to exceed a set amount of alcohol (Delva et al., 2004). In the current study, female students reported significantly more alcohol-related protective behaviors than male students. Specifically, female students watched their drink being made, watched a friend's drink while they were gone, traveled in groups, let a friend know where they were going, and knew where their friends were more often than males. One hypothesis about the increase in some of these behaviors could be due to female tendencies to promote and protect other female group members from harm, whereas males have a tendency toward competition with elimination of other male group members. This may make males less likely to use protective behaviors that involve a degree of social protection, such as traveling in groups, letting a friend know where you are going out, and watching a friend's drink while he is gone (Raghubir, & Valenzuela, 2010).

There were no significant differences between males and females in the use of the other alcohol-related protective behaviors, which included not drinking, hanging out with slow drinkers, setting a time to leave a party or bar, and refusing to ride with a driver who has been drinking. Encouragingly, both males and females reported a relatively high rate

of refusing to ride with a driver who has been drinking, a strategy that has been the focus of recent media campaigns. Although Delva et al. (2004) found that males were less likely to designate a driver, both Delva et al. (2004) and Haines et al. (2006) suggested that many college students are aware of and likely to use this alcohol-related protective behavior.

Greek Status

Students who identify as Greek report more alcohol consumption as compared to students who do not identify as being a part of a sorority or fraternity (Glassman et al., 2010). Many fraternity and sorority functions use alcohol as the primary means for social gatherings, whether at formal events or private parties. The activities, policies, and practices in many fraternities and sororities work together to create a very strong Greek culture that has a considerable influence over its members. Often, this influences members to drink more or makes those choose not to participate in heavy drinking feel alienated (Arnold & Kuh, 1992). Additionally, Greek students' perceptions of risks associated with alcohol-related behaviors were significantly lower than their independent peers (Glassman et al. 2010). In contrast, Weschler et al. (1999) found that the greatest negative alcohol-related consequences were attributable to the 19% of students who drank heavily and frequently, which describes many students in a fraternity or sorority (Baer, 2005). The use of alcohol-related protective behaviors specifically used by students involved in fraternities or sororities has not been studied in detail in the past. However, several studies have indicated a need for more research regarding the extent to

which Greeks use harm-reduction approaches to drinking (College Drinking Prevention, 2010b; Thombs & Briddick, 2000). In the current study, when students were asked how often they chose not to drink, independent students chose not to drink significantly more often than Greek students. Greek students reported drinking more frequently, but they also reported more frequent use of alcohol-related protective behaviors. For example, Greek students were more likely to watch their drink being made and watch a friend's drink while he/she was gone versus their independent peers. This could indicate differences in the social context of how Greeks gather together to consume alcohol in larger numbers than many independents.

One significant similarity between Greek and independent students, is that they both chose the behavior of not riding with a driver who has been drinking significantly more than any of the other eight alcohol-related protective behaviors. This finding concerning riding with a designated driver is also supported by Walters et al. (2007).

Living Situation

There was not a significant difference in the use of alcohol-related protective behaviors between those who lived in the dorm and those who lived outside of campus. This data complements the findings of Walters et al. (2007) that living situation, including living with parents or living in the dorm, did not affect the rate of alcohol-related protective behaviors. It is interesting to note how living situation does not affect the use of these particular behaviors, even though the social context around living situation varies greatly. This might indicate that the social structures within a college

campus are stronger than the environment in which a student lives. For example, if a student lives at home with his or her parents, the student may have less interaction with his peers versus a student who lives on campus and is with his peers day and night.

However, living situation doesn't seem to interfere with how often the student engages in alcohol-related behaviors that are typically used in a social setting with his peers. These behaviors include traveling in groups, letting a friend know where he is, or watching a friend's drink. This may indicate the need for programming that specifically targets students living outside of campus as well as those in the residence halls, as the usage of alcohol-related protective strategies is the same for both populations.

Implications for Education Programming

These results have several implications for health educators in planning, implementing, and evaluating programs that encourage the use of alcohol-related protective behaviors. SCT can help health educators understand the behaviors of college students and what types of interventions would work the best for particular target populations, such as Greek or male students. Particularly, the concepts of reciprocal determinism, outcome expectations, self-efficacy, observational learning, incentive motivation, and facilitation can be very useful in planning successful programs that help reduce alcohol-related negative consequences (McAlister et al., 2008).

Understanding the dynamic interaction between college students and their environment can help health educators plan programs that weave health messages into all aspects of influence in a student's life such as their dorm environment, their social

interactions in and outside of class and their personal choices. Reciprocal determinism focuses on the particular interplay of these personal, behavioral and environmental influences (McAlister et al., 2008). Health educators who understand how these influences interact within individuals and groups can promote alcohol-related protective behaviors in ways that are the most fitting for the group.

Health educators can infuse alcohol-related protective behavior strategies in prevention and intervention programs for alcohol-related consequences, particularly for higher risk students, such as those in a fraternity or sorority. The greatest harm comes to the 19% of students who drink heavily and frequently, which is a characteristic of many Greek and male students (Weschler et al., 1999). This indicates that health educators can target the Greek student population with messages that students who drink and also utilize alcohol-related protective behaviors can reduce their risk of alcohol-related negative consequences. Interventions that focus on behaviors that these students already use, such as watching a drink being made, watching a friend's drink while she is away, and choosing not to ride with a driver who has been drinking, may be very effective because they are consistent with current prevailing social norms.

Another way to promote alcohol-related protective behaviors is to improve his or her belief about their ability to execute these behaviors. Numerous studies have indicated that improving the self-efficacy of a student is important for behaviors that are more difficult or complicated (McAlister et al., 2008). The results from this study indicated that both male and female students utilized a designated driver more than any other

alcohol-related protective behavior. This particular behavior is complex and may take more planning, such as designating a driver or arranging to be picked up by a sober driver. This is an example of a behavior that may increase if health educators worked to increase the student's belief in her ability to plan for a designated driver. The current study results could be interpreted to conclude that a high level of self-efficacy is required in order to perform the behavior of choosing to ride with a designated driver among TSU students. However, other behaviors, such as hanging out with slow drinkers were not utilized as much, and may benefit from promotional plans that focus on increasing the student's perceived ability to hang out with slow drinkers.

Another SCT concept, observational learning, (McAlister et al., 2008), can be used to encourage more students to adopt alcohol-related protective behaviors. For example, if a small group of Greek students consistently watch each other's drinks in social situations, it is more likely that others in the larger group will notice this behavior and begin to adopt this alcohol-related protective behavior themselves. Results from this study indicate that a peer-modeling program might help increase the use of watching each other's drinks as the behavior is typically conducted in a social situation, with more than one person present.

This study revealed that one particular alcohol-related protective behavior that both male and female Greek students use less often is setting a predetermined time to leave a party or bar. In order to increase this particular behavior to the Greek population, it may need to be promoted differently to create more appeal. Although some alcohol-

related protective behaviors are used during the drinking event (watching a drink being made), other behaviors may involve a level of planning (setting a predetermined time to leave the party or bar) that can be the focus of different types of interventions. These interventions might include the SCT concepts of incentive motivation as well as facilitation (McAlister et al., 2008). The use of reward and/or punishment (incentive motivation) is already widely used on college campuses in the form of campus policies that have negative consequences if the policies are broken. For example, students may have to deal with negative consequences if found publicly intoxicated on campus. Alternatively, reward can also be used to incentivize students to adopt certain behaviors. Providing an alternative activity at a time when high-risk drinking occurs could help students leave a party or bar at a predetermined time. For example, university health educators may decide to facilitate a free midnight pancake breakfast on campus to encourage students to set a predetermined time to leave the bar (midnight). The facilitation of extra benefits and reward for either not going out or leaving the bar early may make it easier for students to decide to perform the protective behavior of setting a predetermined time to leave the bar.

Health educators at TSU can utilize the results of this study to assist with planning programs on campus that help reduce the alcohol-related negative consequences. Programs that understand and apply the concepts of the SCT may better serve the target populations better because of the central focus on how student interacts with his individual, social and environmental influences.

Implications for Health Educators

The National Commission for Health Education Credentialing (NCHEC, 2010) has published responsibilities and competencies for health educators, and these delineations are important for this and further studies of alcohol-related protective behaviors. There are seven areas of responsibility that a health educator is responsible for in order to bring health behavior changes in an individual or population. Research on the use of alcohol-related protective behaviors will help health educators become more aware of how to use these behaviors to foster all seven areas of responsibility. The first responsibility of health educators is the assessment of individual and community needs for health education (NCHEC, 2010). The results of this study have important implications for college students in the US and have raised awareness about the use of alcohol-related protective behaviors. The health educator is positioned to facilitate the ongoing data collection needed to assess the continued use of alcohol-related protective behaviors on TSU and other college campuses. Health educators can initiate dialogue on college campuses to encourage measuring the use of alcohol-related protective behaviors on their own campus and comparing their results to published data.

The second and third responsibilities of health educators are related to planning and implementing education strategies, interventions, and programs (NCHEC, 2010). The identification of the use of alcohol-related protective behaviors is important in planning for educational needs on college campuses and in the surrounding community. More specifically, the identification of how often different populations use these

behaviors is important for planning strategies, technologies, and media that are necessary to communicate to these target populations (such as Greek men). The competencies of a health educator are also needed to implement interventions aimed at reducing alcohol-related negative consequences through a comprehensive plan that includes the promotion of alcohol-related protective behaviors. The use of alcohol-related protective behaviors by college students may change as they matriculate through college, so health educators must stay relevant and constantly mold educational strategies. The health educator can also play a vital role in campus wellness centers, offering educational materials directly to individuals as well as planning larger scale campus-wide educational materials.

The fourth responsibility of a health educator is to conduct evaluation and research related to health education (NCHEC, 2010). Health educators can be leaders in researching the effectiveness of promoting alcohol-related protective behaviors. Evaluation is paramount to the success of future programming aimed at college students, so health educators should routinely evaluate the use of alcohol-related protective behaviors by different target groups and adapt any future interventions to reflect the changes in behavior among these groups. For example, research of the effectiveness of an ad campaign that promotes the use of a designated driver by fraternity and sorority members would be a valuable contribution to a discussion on how much time and effort is spent on future ad campaigns related to designated driving. Health educators are well-versed in qualitative and quantitative evaluation methodology and can provide a solid foundation for assisting in a collaboration of campus and community leaders to provide

more effective educational promotions regarding designated driving and other alcohol-related protective behaviors.

The fifth responsibility of health educators is the administration of health education strategies, interventions, and programs (NCHEC, 2010). Health educators are prepared to strategically plan and organize leadership from the campus and the surrounding community who are committed to the health of the students. The fifth competency within the fifth responsibility is to facilitate partnerships in support of health education (NCHEC, 2010). An important contribution in this area would be the coordination and development of a volunteer coalition that includes students, professors, school administrators, law enforcement agents, local community leaders, community business owners, and other community members who are committed to promoting alcohol-related protective behaviors to protect and improve the health and safety of the student body.

The sixth and seventh responsibilities are related to communication, advocacy, and serving as a health education resource (NCHEC, 2010). The responsibility of health educators to maintain a comprehensive knowledge of the research in the area of alcohol-related consequences and alcohol-related protective behaviors among college students is important in order to communicate accurate information. An important competency under the seventh responsibility is to deliver messages using a variety of strategies, methods, and techniques (NCHEC, 2010). Health educators are prepared to use a variety of strategies to promote alcohol-related protective behavior messages. For example,

health educators could print social norms messages on T-shirts or mouse pads promoting a common protective behavior that a majority of students use, such as “85% of Truman Students choose to ride with a designated driver.” Other messages might be disseminated through computer technology, such as banners that appear on the school’s homepage, mass e-mail communication or integrating messages via social media. Health educators also have the opportunity to advocate for policies and laws that promote student safety, such as those that ban advertising drink specials in college communities. Overall, health educators have the opportunity to play a dynamic role in the planning, implementation, and evaluation of programs that promote alcohol-related protective behaviors on college campuses.

Limitations

The current study utilized a convenience sample of students at TSU; therefore, the results may not be generalizable to other college campuses in Missouri and across the nation. The paper survey used to collect data for this study was disseminated and collected during the course of one 50-minute class period and may be vulnerable to reporter bias. Due to the cross-sectional nature of the study, responses to the survey questions may have been influenced by college students’ psycho-physical state at the time of participation. This study evaluated the effect of variables such as gender, Greek affiliation, and living situation on nine alcohol-related protective behaviors, but there were only a few significant associations. The lack of additional findings, in addition to different findings between this and other previous studies, might be attributable to sample

limitations. For example, other researchers have examined students who consume different levels of alcohol (Walters et al., 2007) or who represent student bodies from other universities (Haines et al., 2006). In addition, this study’s sample was relatively young (mean age of 19) and mostly White (87%). The protective behaviors in this study also differed somewhat from those used in previous studies. For example, Walters et al. (2007) did not use “hang out with slow drinkers,” “watched your drink being made,” “watched a friends drink while he/she is away,” or “traveled in groups.” However, the most frequently used alcohol-related protective behavior in this study was also similar to those reported by Walter et al. (2007), Delva et al. (2007), and Haines et al. (2006). This behavior was choosing not to ride with a driver who has been drinking.

Despite these limitations, this study provides information about associations of alcohol-related protective behaviors in a small group of younger students. Future studies with a larger sample size and a more heterogeneous population would provide more information for which to further refine interventions based on promoting alcohol-related protective behaviors among college students.

Recommendations

SCT can be applied to create interventions to promote alcohol-related protective behaviors by involving the individual, the campus, and the surrounding community. A comprehensive approach to reducing alcohol-related negative consequences is encouraged to obtain the best results for each individual college and university campus, based on needs and the use of alcohol by different segments of the population. At TSU, a

comprehensive intervention based on promoting alcohol-related protective behaviors should target students who are at higher risk for alcohol-related consequences, including males and Greek students. A successful intervention might include peer educators, facilitation of on-campus events, messaging of social norms on and off campus, and the help of local establishments to reinforce the efforts of the campus-led interventions.

Data from the current investigation and previous research indicates a potentially fruitful area of research on creating a standardized scale for measuring a wide range of alcohol-related protective behaviors. Currently, only one 15-item scale exists to measure alcohol-related protective behaviors - the Protective Behavioral Strategies Survey. Developed by Martens et al. (2005), this scale asks participants to identify different protective behaviors they might have used in the last three months while they were drinking. Respondents rate items on a 5-point Likert scale from “never” to “always.” However, this scale is limited to 15 items and does not include the wide range of typically more social alcohol-related protective behaviors, such as “watching a friend’s drink” and “hanging out with slow drinkers.” Quantifying a wider range of alcohol-related protective behaviors may expand the contemporary knowledge base in this area.

Despite the limitations previously described, the results of the current study enhance the existing research on the use of alcohol-related protective behaviors by particular groups of a university population (Walters et al., 2007). Campus health educators may find an increased ability to influence their student body by knowing how gender, Greek affiliation, and living status affect the use of alcohol-related protective

behaviors. Using the SCT as a basis for promoting alcohol-related protective behavior programs may also help to create more effective, comprehensive interventions.

The findings of the current study suggest a number of areas that can be the focus of alcohol-related protective behavior interventions that target reducing alcohol-related consequences by using the SCT. It also suggests several areas that need further research. The Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism (2002) has suggested that increased research is necessary to determine whether comprehensive, multi-component interventions that encourage students to engage in more alcohol-related protective behaviors and consume less alcohol lead to fewer alcohol-related problems on college campuses in the US. Fully understanding the use of alcohol-related protective behaviors by each student on campus will bring campus health educators closer to their ultimate goals of a safer campus and a healthier student body.

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APPENDIX A

Attitudes About Alcohol Survey

DO NOT WRITE YOUR NAME ON THIS SURVEY!

CONSENT PAGE

You must be 18 years or older to participate in this survey. Your completion of the survey is voluntary. The survey takes approximately 10 minutes to complete, and your responses are anonymous. They will not be associated with you or have any effect on your grades or relationship with TSU faculty or staff. Feel free to contact Roberta Donahue at ext. 7214 if you desire assistance with completing this survey or have any questions regarding this research study. If you have any questions regarding your rights as a participant in research, please contact the Campus Institutional Review Board at 660-785-7459. You may wish to obtain a copy of this consent for your records. Please ask the investigator to provide you with a copy. Thank you for your participation. Please begin to fill out the survey if you understand and agree with the statements made above. By filling out the survey, you give us permission to include your questionnaire in our Attitudes About Alcohol research project.

Demographic Information

1. Please indicate your gender:

- 1. Female
- 2. Male
- 3. Transgender

2. Please indicate your race:

- | | |
|----------------------------|-----------------|
| 1. Asian/Pacific Islander | 6. 22 |
| 2. Black (non-Hispanic) | 7. 23 |
| 3. Hispanic | 8. 24 |
| 4. Native American/Alaskan | 9. 25 |
| 5. White (non-Hispanic) | 10. 26 |
| 6. Middle-Eastern | 11. 27 |
| 7. Bi-or Multiracial | 12. 28 or older |
| 8. Other _____ | |

4. Please indicate your year in school:

- 1. First Year
- 2. Second Year
- 3. Third Year
- 4. Fourth Year
- 5. Fifth Year
- 6. Graduate
- 7. Other _____

3. Please indicate your age:

- 1. 17 or younger
- 2. 18
- 3. 19
- 4. 20
- 5. 21

5. Please indicate your affiliation:

- 1. Greek
- 2. Independent

6. Please indicate your living situation:

- 1. Living in residence halls
- 2. Living in an apartment / house
- 3. Living in fraternity / sorority
- 4. Living at home with family
- 5. Other _____

Values and Activities

7. How much do you value each of the following?

| | Not at all | | | Somewh at | | | A great deal |
|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Appearance | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Career | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Education | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Faith | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Family | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| | | | | | | | |
|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Friends | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Money | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Partying | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Success | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Alcohol

7. For the following question we are interested in learning how much students prefer certain activities to drinking. Please rate how much you enjoy doing the following activities compared to going to a bar/party/event where you are drinking alcohol. Assume all events below are ALCOHOL-FREE

| | Enjoy much less than drinking | Enjoy less than drinking | Enjoy same as drinking | Enjoy more than drinking | Enjoy much more than drinking |
|--|--|--------------------------------|---------------------------|--------------------------------|--|
| Go shopping | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Go to a bar/night club (without alcohol) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Go to a park | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Go to a party (without alcohol) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Go to the casino boats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Play cards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Surf the internet | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Play or listen to music | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| | | | | | |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Play sports/work out | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Play video games | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Read | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Spend time with family | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Spend time with friends | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Study | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Watch a movie | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Work | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

8. How important are each of the following in making a party or bar fun?

| | Not at all important | | Moderately important | | Very important |
|---------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Alcoholic drinks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Atmosphere | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Being with friends | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dancing | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Food | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Meeting new people | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Music/entertainment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Drinking games | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

9. Which statement below about drinking alcoholic beverages do you feel best represents your own attitude?

- 1. Drinking is never a good thing to do
- 2. Drinking is all right, but a person should not get drunk
- 3. Occasionally getting drunk is okay as long as it doesn't interfere with academics or other responsibilities
- 4. Occasionally getting drunk is okay even if it does interfere with academics or other responsibilities
- 5. Frequently getting drunk is okay if that's what the individual wants to do

10. If all other things were equal, would you prefer to kiss someone who was not drunk?

- 1. Yes
- 2. No
- 3. It doesn't matter

11. How do you feel when your date or a person you are interested in drinks so much that she or he gets loud or obnoxious? Rate each statement below on how you would react.

| | Not at all like me | 2 | 3 | 4 | Very much like me |
|--------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| My interest in the person decreases. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I become embarrassed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I'm not bothered by it. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I get concerned. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I think it is funny / I enjoy it. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| It does not matter to me. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

12. When going out/hanging out with males, I prefer to be around males who...

1. Don't drink
2. Drink moderately and stay in control
3. Drink heavily and get out of control

13. When going out/hanging out with females, I prefer to be around females who...

1. Don't drink
2. Drink moderately and stay in control
3. Drink heavily and get out of control

14. The alcohol laws and policies on campus should be enforced _____:

1. More.
2. As much as they currently are.
3. Less.
4. I don't know

15. In the past year, how often have you done the following at parties, bars, or social gatherings with alcoholic beverages?

16. What would make you want to leave a bar or not go to a bar? (Please circle all that apply)

1. The atmosphere is too smoky
2. The music is too loud
3. Feeling unsafe
4. Other drunken people
5. None of the above

17. Which of the following motivates you to drink less or not to drink? (Please circle all that apply)

1. Higher cost of drinks/alcohol
 2. Stricter rules to obtain alcohol
 3. Academic obligations the following day
 4. Potential of getting sick or having a hangover
 5. The possibility of getting caught by authorities
 6. Your friends are drinking less
 7. Potential of doing something I later regretted
 8. Being the designated driver
 9. Potential of parents finding out
 10. Your behavior when you are drunk
 11. Other
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