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**UNDERSTANDING FACTORS INFLUENCING LEVEL OF DEPENDENCE AND
ALCOHOL RELATED CONSEQUENCES IN COLLEGE STUDENTS**

A Dissertation in

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by

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ABSTRACT

College student alcohol use is a public health issue that impacts students physically, mentally, and emotionally. Implementation of effective programming is a challenge for higher education institutions around the country. There is a need for counselors providing these programs to understand their clients through a developmental lens that highlights multiple facets that impact students' level of dependency and alcohol related consequences. This researcher sought to add knowledge to the understanding of individual factors – mental health, personality, other drug use, self-efficacy, and class beliefs – that influence college student drinking. In turn, the findings have the potential to enhance the work of mental health counselors, health educators, advisors, administrators, and professors to better serve their students by addressing drinking behaviors, academic goals, and promoting student health and wellness. Participants in this study were 277 undergraduate students attending a 4-year, state-related university with an enrollment over 44,000 students. The students were mandated to attend a brief alcohol intervention, BASICS, to fulfill conduct requirements. Participants completed an array of self-report questionnaires addressing level of dependence, alcohol related consequences, depression, anxiety, hopelessness, anxiety-sensitivity, impulsivity, self-efficacy, family history, other drug use, age, class level, and college alcohol beliefs. A multiple linear regression was used to understand the relationship among the multiple independent variables and the dependent variables, level of dependence and alcohol related consequences. Results from the initial research question indicated that number of alcohol related consequences and other drug use significantly predict level of dependence. The second research question results indicated that an increase in depression scores, anxiety-sensitivity scores, and level of dependence, increased number of alcohol related consequences, while increased in self-efficacy scores significantly

decreased number of alcohol related consequences. The final research question indicated that increased class level and self-efficacy scores, resulted in decreased level of dependence, while increased age and college alcohol beliefs scores significantly increased level of dependence.

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CHAPTER 1: INTRODUCTION

Background

According to the Spring 2017 National College Health Assessment, 66.8% of college students used alcohol in the past 30 days. College drinking contributes to multiple consequences including physical assaults, sexual assaults, academic problems, suicide attempts, health problems, injuries, unsafe sex, driving under the influence, vandalism, property damage, legal issues, and death (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2015). These alcohol related consequences are paired with heart-wrenching stories that have resulted in recommendations on how to address alcohol misuse on college campuses, including: changing alcohol policies, decreasing availability and increasing cost of alcohol, tightening conduct penalties, notifying parents of misconduct, increasing social organization oversight, distributing mass marketing campaigns, and delivering prevention and intervention programs (Walters & Baer, 2006).

Recent tragedies associated with alcohol use at college campuses have resulted in similar campus-wide responses with the implementation of new policies and providing empirically supported programs for high-risk drinkers (Nelson, Toomey, Lenk, Erickson, & Winters, 2010). However, few have implemented many other recommendations made by the 2002 NIAAA College Drinking Task Force report titled, *A Call to Action: Changing the Culture of Drinking at U.S. Colleges* (Nelson et al., 2010; NIAAA, 2002). The report outlined a 3-in-1 framework that targeted three major stakeholders utilizing an integrative approach: individuals, both at-risk and dependent drinkers; the whole student population; and the college and the community (NIAAA, 2002). The report provided colleges with evidence-based prevention strategies organized into four tiers (NIAAA, 2002). Tier 1 included strategies found to be effective in college student

populations (Nelson et al., 2010; NIAAA, 2002). Tier 2 strategies were effective for the general population, and adaptable for the college population (Nelson et al., 2010; NIAAA, 2002). Tier 3 strategies were theoretically promising, but needed additional evaluation (Nelson et al., 2010; NIAAA, 2002). Tier 4 strategies were identified as ineffective (Nelson et al., 2010; NIAAA, 2002). Table 1.1 outlines the 3-in-1 framework and the various strategies by each tier.

Table 1.1: 3-in-1 Framework (adapted from NIAAA, 2002)

Tier	Strategy	Level of Operation		
		Individuals At-Risk and Dependent	Student Population as a Whole	Campus & Community
1: Evidence of Effectiveness Among College Students	Combining cognitive-behavioral skills with norms clarification and motivational enhancement interventions	Yes	No	No
	Offering brief motivational enhancement interventions	Yes	No	No
	Challenging alcohol expectancies	Yes	No	No
2: Strategies Evidence of Success with General Populations Applicable to College Environments	Increased enforcement of minimum drinking age laws	No	Yes	Yes
	Implementation, increased publicity, and enforcement of other laws to reduce alcohol-impaired driving	No	Yes	Yes
	Restrictions on alcohol retail outlet density	No	No	Yes
	Increased price and excise taxes on alcoholic beverages	No	No	Yes
	Responsible beverage service policies in social and commercial settings	No	Yes	Yes
	The formation of a campus community coalition involving all major stakeholders	No	Yes	Yes
3: Strategies Logically and Theoretically Promising, Require More Comprehensive Evaluation	Adopting campus-based policies that appear to be capable of reducing high-risk alcohol use (e.g., reinstating Friday classes, eliminating keg parties, establishing alcohol-free activities and dorms)	No	Yes	No
	Increasing enforcement at campus-based events that promote excessive drinking	No	Yes	No

	Increasing publicity about and enforcement of underage drinking laws on campus and eliminating ‘mixed messages’	No	Yes	Yes
	Consistently enforcing disciplinary actions associated with policy violations	No	Yes	No
	Conducting marketing campaigns to correct student misperceptions about alcohol use	No	Yes	No
	Provision of ‘safe rides’ programs	No	Yes	Yes
	Regulation of happy hours and sales	No	Yes	Yes
	Enhancing awareness of personal liability	Yes	Yes	No
	Informing new students and parents about alcohol policies before arrival and during orientation	Yes	Yes	No
4: Strategies Evidence of Ineffectiveness	Informational, knowledge-based, or values clarification interventions about alcohol and the problems related to its excessive use, when used alone	N/A	N/A	N/A

Nelson and colleagues (2010) found that 21% of the 351 schools surveyed were not aware of the recommendations, 3% reviewed and implemented all of them, and 39% reviewed and implemented some of them. Tier 1 strategy, offering intervention programs for high-risk students, was provided at 66% of the schools surveyed. Fewer Tier 2 strategies were utilized, with more than 70% of administrators reporting that they had not employed ways to reduce the number of alcohol retail outlets, increase alcohol prices, or mandate responsible alcohol service trainings (Nelson et al., 2010). When totaled, 23% of schools did not utilize any Tier 1 and Tier 2 strategies; 45% utilized 1 strategy; 20% applied 2 strategies; and 11% employed 3 or more strategies (Nelson et al., 2010). Beyond Tier 1 and Tier 2 strategies, 98% of colleges reported using various methods to educate their students about alcohol use – 87% in the form of lectures and workshops, 70% as poster campaigns, 65% via online programs, 60% as mailings or printed information, and 20% offered special courses on alcohol and student life issues. Though the latter numbers are promising, it is important to recall that these strategies are ineffective when

used in isolation (NIAAA, 2002). Ultimately, these numbers indicate that there is still more work to be done to reach students and stakeholders individually, collectively, and community-wide in order to produce a change in the college drinking culture.

Within this study, I will focus on students at the individual level, specifically looking at data collected during the implementation of a Tier 1 strategy, a motivational enhancement intervention. Understanding college students and the variables influencing their levels of alcohol use is critical to understanding how to best intervene. The NIAAA (2015) attributed aspects of college life – unstructured time, access to alcohol, inconsistent enforcement of policies and laws, and social pressures – to the exacerbation of established student drinking habits. Change of environment and social norms is only part of the transition occurring during college. College students are entering into a transformational time filled with developmental challenges to their identity, emotions, and self-efficacy. It is vitally important to place college student drinking into this context of major intrapersonal and interpersonal challenges. To more fully frame this context college student development theory as well as self-efficacy theory will be used in this study.

Two theoretical frameworks are used in this study, Chickering and Reisser's (1993) Psychosocial Student Development Theory and Bandura's Self-Efficacy Theory, to assist in understanding college student development and self-efficacy as it pertains to alcohol use. Chickering and Reisser (1993) believed that the role of higher education institutions was to facilitate healthy student development in conjunction with intellectual learning. Chickering's theory highlighted the interpersonal and intrapersonal challenges student's face throughout their college years. These challenges or areas for growth were categorized into seven vectors of development, ultimately contributing to identity formation. These vectors included: (1) developing competence, (2) managing emotions, (3) moving through autonomy toward

interdependence, (4) developing mature interpersonal relationships, (5) establishing identity, (6) developing purpose, and (7) developing integrity.

When specifically considering college student drinking, Bandura's theory of self-efficacy, which stems from his social cognitive theory, adds a critical component to Chickering's framework. Bandura (1997) proposed that self-efficacy is the belief that one has the ability to cope or perform an action to attain a desired outcome. Self-efficacy influences the choices one makes, the effort one puts forth, how long one persists in the face of obstacles, and how one feels (Bandura, 1997). Bandura (1997) posed that self-efficacy is acquired, enhanced, or decreased by four sources: (1) mastery experience, (2) vicarious experience, (3) verbal persuasion, and (4) physiological states. Oei, Hasking, and Young (2005) adapted this idea of self-efficacy and applied it to alcohol use, calling it drinking refusal self-efficacy (DRSE). DRSE is the belief in one's ability to refuse or resist drinking alcohol in certain situations (Oei et al., 2005).

Navigating a new environment raises complex emotions that contribute to the way college students interact with alcohol. Chickering's Psychosocial Student Development Theory and Bandura's Self-Efficacy Theory highlight the significance of intrapersonal and interpersonal challenges fostering the development of one's identity and the beliefs about one's capabilities to perform successfully. Though these theories do not explicitly address college student drinking, they do offer insight into the developmental world of college students and the challenges they face when presented with new responsibilities and choices. Understanding student development and self-efficacy hold implications for college student alcohol intervention programs moving forward. Both theories are discussed further in chapter two of the current study.

The history of college student alcohol use offers an additional framework for this study. In Chapter 2, I provide a detailed history of the evolution of alcohol use among college students

and the various individual, cultural, and environmental influences that impacted drinking behaviors, policies, and intervention and prevention programs. From past and current research, multiple demographic (e.g., age, race, sex, and living arrangement) and individual factors (e.g., mental health, drinking beliefs, and self-efficacy) impact college student drinking and alcohol related consequences. A range of intervention programs have been developed over time to address some of these factors, yet not all have been effective. In the latter part of Chapter 2, I will briefly review various college student drinking interventions, and expand on the Brief Alcohol Screening and Intervention for College Students (BASICS), its effectiveness, and areas for potential enhancement.

A review of the history, theory, current research, trends in college student drinking, and alcohol related consequences, has prompted further inquiry into how to better address the widespread problem of college student drinking via individual alcohol intervention programs.

Statement of Problem

Implementing effective prevention and intervention programs continues to be a challenge for higher education institutions around the country (Grossman, Canterbury, Lloyd, & McDowell, 2001; NIAAA, 2015). While effective programs are being implemented, they do not always understand students holistically – taking into account their individual personality traits, mental health issues, family history, and self-efficacy throughout the programs. Instead of looking at students as demographics and grouping them into categories, there is a need for counselors providing these programs to understand their clients through a developmental lens that highlights multiple facets that impact students' level of dependency and alcohol related consequences. An examination, therefore, of individual factors (i.e., mental health, personality, self-efficacy, and class beliefs) that have the potential to change with counseling, is warranted in

order to identify which factors that influence level of dependence and alcohol related consequences are most important to focus on in session and beyond.

Research Questions

Individual factors that influence level of alcohol use and alcohol related consequences through an integrated lens of student development and development of self-efficacy will be addressed in this study in order to enhance current evidence-based intervention programs targeting college student drinking.

RQ1: Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), number of alcohol related consequences (YAACQ), self-efficacy (DRSE), family history, and other drug use, predict level of dependence (AUDIT)?

RQ2: Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), level of dependence (AUDIT), sensation seeking (SURP subscale), self-efficacy (DRSE), family history, and other drug use, predict number of alcohol related consequences (YAACQ)?

RQ3: Does class level, age, self-efficacy (DRSE), impulsivity (SURP subscale), and college alcohol beliefs (CLASS) predict level of dependence (AUDIT)?

Significance of Study

The findings of this study will provide insight into the various developmental and individual factors influencing college student drinking. With an understanding of these factors, college campuses can improve the effectiveness of their programs and enhance the support of their students. With enhanced effectiveness, individual students will have a better understanding

of what factors influence their drinking and will be better equipped with strategies and skills to initiate and maintain safer drinking strategies.

Limitations of the Study

Utilizing past data, the use of self-report questionnaires, and participant recruitment were limitations to this study. The data used in this study were from a larger study implemented over seven years ago, which means the data did not include variables related to more recent trends like social media, and could be considered outdated. It also did not provide the opportunity to include additional questions or integrate qualitative questions to connect the data with student narratives. The data were all self-report data which is known to be a concern due to validity issues. Lastly, the data were collected from student who were mandated to attend the BASCICS intervention. This could impact how they answer questions for fear of punishment or uncertainty about the confidentiality policy, as well as, make the initial rapport building difficult for the counselor, resulting in unsatisfactory connection with the client or lack of time to cover all aspects of the program.

Definitions of Terms

College student. Individuals enrolled in an institution of higher education, a university or college. The individuals could be registered part-time or full-time and range between the ages of 18-24 years.

Binge or Heavy Episodic Drinking. Binge drinking or heavy episodic drinking involves an individual's blood alcohol concentration (BAC) level reaching 0.08 g/dL; this typically occurs after 4 or more drinks for women and 5 or more drinks for men over a 2-hour period (NIAAA, 2015; Substance Abuse and Mental Health Services Administration [SAMHSA], 2016b).

Frequent Binge Drinkers. Frequent binge drinkers a term utilized to further distinguish how often students were binge drinking. Frequent binge drinkers are those who engaged in binge drinking 3 or more times in the past 2 weeks, or an average of more than one time per week (Wechsler, Lee, Kuo, and Lee, 2000).

Risky Drinking. Risky drinking defines a pattern of drinking – consumption of large quantities (or more than four standard drinks) of alcohol on a single occasion, as well as drinking in situations likely to result in harm (Gilligan, Kypri, & Lubman, 2012).

Standard drink. Standard drink in the United States refers to a drink containing about 14 grams of pure alcohol. This is equivalent to 12oz of beer with 5% alcohol content, 5oz of wine with 12% alcohol content, and 1.5oz of distilled spirits or “hard liquor” with 40% alcohol content (NIAAA, 2015).

Blood Alcohol Concentration (BAC) level. Blood Alcohol Concentration (BAC) level is the concentration of alcohol in the bloodstream which is determined by sex, weight, amount of alcohol consumed, and over how much time the alcohol was consumed (Centers for Disease Control and Prevention [CDC], 2016). Other factors that impact BAC include age, physical condition, food consumed beforehand, use of drugs or prescription medications, race or ethnicity, or family history of alcohol misuse (CDC, 2016).

Alcohol Use Disorder (AUD). Alcohol Use Disorder (AUD) is defined by the DSM-5 (American Psychiatric Association [APA], 2013) as anyone meeting 2 of 11 criteria during a 12-month period. The severity of an AUD can be mild, moderate, or severe, and is determined by the number of criteria met. The criteria from the DSM-5 (APA, 2013) are listed below in Table 1.2.

Table 1.2
DSM-5 Diagnostic Criteria for Alcohol Use Disorder (APA, 2013)

Alcohol Use Disorder Criteria	
1.	Had times when you ended up drinking more, or longer than you intended?
2.	More than once wanted to cut down or stop drinking, or tried to, but couldn't?
3.	Spent a lot of time drinking? Or being sick or getting over the aftereffects?
4.	Experienced craving – a strong need, or urge, to drink?
5.	Found that drinking – or being sick from drinking – often interfered with taking care of your home or family? Or caused job troubles? Or school problems?
6.	Continued to drink even though it was causing trouble with your family or friends?
7.	Given up or cut back on activities that were important or interesting to you, or gave you pleasure, in order to drink?
8.	More than once gotten into situations while or after drinking that increased your chances of getting hurt (such as driving, swimming, using machinery, walking in a dangerous area, or having unsafe sex)?
9.	Continued to drink even though it was making you feel depressed or anxious or adding to another health problem? Or after having had a memory blackout?
10.	Had to drink much more than you once did to get the effect you want? Or found that your usual number of drinks had much less effect than before?
11.	Found that when the effects of alcohol were wearing off, you had withdrawal symptoms, such as trouble sleeping, shakiness, irritability, anxiety, depression, restlessness, nausea, or sweating? Or sensed things that were not there?

CHAPTER 2: LITERATURE REVIEW

Overview of College Student Alcohol Use

High-risk use of alcohol among U.S. college students results in over 1,800 deaths, 696,000 assaults and 97,000 sexual assaults (Hingson, Heeren, Winter, & Wechsler, 2005; Hingson, Zha, & Weitzman, 2009). About 60 % of college students ages 18-22 reported consuming alcohol in the last 30 days and 67 % of those students engaging in binge drinking (SAMHSA, 2016a). According to NIAAA (2015), many college drinking issues are related to binge drinking, posing serious threats to health, safety, and academics. I begin this chapter with a review the history of college student alcohol use, the prevalence and consequences of college drinking, and the prevention and intervention efforts implemented over time, focusing on the Brief Alcohol Screening and Intervention for College Students (BASICS); and end with a discussion of Chickering's Psychosocial Student Development Theory and Bandura's Self-Efficacy Theory to provide an understanding of the transitions college students are experiencing developmentally and how this connects to college student alcohol use interactions.

History of College Student Alcohol Use

College student alcohol use has been empirically researched since the 1920s (Dowdall, 2009); however, primary sources, such as diaries, 'college novels,' and administrative records, depict college student drinking behaviors since 1636, the year Harvard University was founded (Harvard, 2017; Winthrop, 1908). Even one of America's founding fathers, John Adams, developed a habit of drinking a hard cider every morning before breakfast while attending Harvard – a practice that continued throughout his life (Hevel, 2011). As the nation expanded after the Louisiana Purchase in 1803 and the acquisition of Texas, the Oregon Territory, and Mexican territory, so too did the number of colleges from twenty-three in 1820 to more than two

hundred in 1860 (Hevel, 2011). Coinciding with the growing number of colleges and a 50% increase in men attending colleges, was an increase in alcohol consumption (Hevel, 2011). Though this pattern was documented, historians paid little attention to college drinking and the significance of it in the antebellum era, and instead focused on more infamous alcohol-related cases like when a Princeton student attempted to shoot the college president after a night of heavy drinking at a local tavern (Hevel, 2011; Wertenbaker, 2014). Though college student drinking continued to make headlines throughout history, the relationship between alcohol and college students was also making it into titles of research studies and journal articles.

In 1945, Dr. Clements Collard Fry, a pioneer in college student mental health, published the first article focusing exclusively on college student drinking in the *Quarterly Journal of Studies on Alcohol* titled, “A note on drinking in the college community” (Kilmer, Crouce, & Larimer, 2014). In his essay, he noted how college drinking symbolized “good fellowship,” with fraternities serving wine at dinner as a way to teach young men how to appreciate pairings of good wines and food and professors attending “beer parties” (as cited in Kilmer et al., 2014, p. 27). Fry cautioned that alcohol was also being used to achieve an intoxicated state and drinking alcohol in this manner provided a way for students to cope with stressors, particularly for World War II veterans returning to college (Hart, 1956; Kilmer et al., 2014). Though Fry focused on veterans, given he was the principal investigator for studies contracted by the Office of Scientific Research and Development of the National Research Council, later known as the War Department in 1943, he ultimately pleaded for universities and the public to see alcohol disorders as a health concern for students, and that students should have access to psychiatric treatment rather than disciplinary action (Hart, 1956; Kilmer et al., 2014). Fry’s essay was a catalyst for subsequent research on alcohol use among college students.

Three years later, Carol A Hecht, Ruth J. Grine and Sally E. Rothrock (1948) under the direction of Dr. Jessie Bernard, a sociology professor at The Pennsylvania State University, wrote an article for the *Quarterly Journal of Studies on Alcohol* titled, The drinking and dating habits of 336 college women in a coeducational institution (Kilmer et al., 2014). The relation between drinking, dating, and grades was examined in this study; they found that regular drinking and dating frequency were related; with less serious relationships forming among regular drinkers and finding no relationship between drinking frequency and grades (as cited in Kilmer et al., 2014). The findings of this article are of importance in that not only did it look at female drinking patterns, it also took into account social factors affecting college drinking.

Almost ten years after Fry's seminal article, Robert Straus and Selden D. Bacon conducted the first large-scale study of college drinking across 27 U.S. colleges as part of the Yale Center of Alcohol Studies on college drinking customs (Straus & Bacon, 1953). Their study involved distributing questionnaires to over 17,000 students that asked about incidents of drinking, amount and frequency of consumption of alcoholic beverages, motivations for student drinking, physical and group settings where drinking occurred, perception of the relationship between consumption and sexual behavior, and veterans' drinking habits (Straus & Bacon, 1953). Straus & Bacon (1953) found that college drinking reflected the drinking customs of U.S. society, with the number of college students identified as potential problem drinkers matching the proportion of alcoholics in the U.S. adult population at that time. Many researchers at the time and even today found this study to be groundbreaking, while others like John Hirsh, a consultant to the Committee on Problems of Alcohol of the National Research Council and author of *The Problem Drinker* and *Alcohol Education*, wrote unfavorable reviews of the study (Dowdall, 2009; Hirsh, 1953). Hirsh cited the study's inconclusive information regarding

various topics and the authors' negation of biology and morality, and only looking at pre- and post- influences like family patterns and social and religious affiliations; additionally, despite its title, the book deflates the idea of college drinking (Hirsh, 1953). Though Straus and Bacon's 1953 study had inconclusive results in some areas, it ultimately provided data indicating that attendance alone did not have a significant effect on whether a student drinks or not, but that the home and social group the student comes from determined the student's relationship to liquor (Heron, 1953). Ultimately, this study has become a classic because it was the first large-scale study of college drinking, and it facilitated further research and innovation in college student drinking studies.

Following the work of Straus and Bacon (1953), researchers studied various descriptive topics: the heavy use of alcohol by men in fraternities and the impact parental drinking, religious affiliation, and peer influence had on their consumption (Gusfield, 1961); parental attitudes and messages about drinking (Shaw & Campbell, 1962); alcohol use among African American college students (Maddox & Borinski, 1964; Maddox & Williams, 1968); and psychological constructs and personality traits of 'problem drinkers' versus 'alcoholics' (Williams, 1965;1967). These descriptive studies continued to build, but it was Williams' (1968) study that moved beyond descriptions. Williams (1968) conducted research before, during, and after a night of drinking and found that college students with high scores on problem drinking rated themselves higher in confidence, disinhibition, and impulsiveness during the party, believing they could do things they could not do when sober; Williams concluded that these students were at risk for more frequent drinking and becoming dependent with continued use. Ultimately, Williams (1968) emphasized risk factors and provided a foundation for alcohol expectancy research in the 1970s and 1980s. Towards the end of the 1960s, researchers (Jessor, Carman, & Grossman;

LeMay, 1968; Smart, 1968) were focusing on context, ranging from individual differences (i.e. anxiety, importance of academic achievement and peer affection) and their impact on drinking to school policy enforcement. Around this same time, the study of college drinking patterns was occurring around the world, studying the use of other drugs and cultural attitudes regarding drinking. Interest in college student alcohol use was rising and with that came more research coupled with political attention.

In 1970, President Nixon signed the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act of 1970, also known as the Hughes Act, which led to the establishment of the National Institute on Alcohol Abuse and Alcoholism (NIAAA) (NIAA, n.d.b). With the creation of NIAAA, funding for prevention research was provided and this legitimized the idea that alcohol misuse was a public health concern that required intervention and treatment (Kilmer et al., 2014). Over the next ten years, there was a surge in research focusing on prevention efforts (Biggs, Orcutt, & Bakkenist, 1974; Engs, 1977; Filstead, Rossi, & Goby, 1976). Biggs and colleagues (1974) directly addressed campus administrators and student personnel, urging them to reconsider how they tackled alcohol use on campus, highlighting the need for orientation programs and activities to intervene in the socialization process – this included working with students, parents and staff to understand the dynamics of college student substance use rather than seeing it as an individual issue in a vacuum. Filstead and colleagues (1976) summarized an Illinois statewide conference held to identify problems and solutions for alcohol-related problems on campus. The authors of the report made many suggestions that are relevant today such as, campus stakeholders should develop and enforce alcohol policies consistently, train residence hall staff to be able to identify students with possible alcohol use issues, integrate peers into prevention efforts, and develop and coordinate

campus and community treatment services (Filstead et al., 1976). Engs (1977) provided a reminder to prevention researchers, asserting it is critical that researchers evaluate effectiveness – prevention programs should not simply change knowledge around drinking, effective prevention programs should change drinking behaviors.

In the late 1980s to early 1990s, prevention and intervention efforts continued to emerge, departing from the Reagan-era ‘just say no’ programs to skills training and harm-reduction interventions (Kilmer et al., 2014). With previous research noting how expectancies influence student drinking, researchers aimed to modify these expectancies through intervention. Fromme, Kivlahan, and Marlatt (1986) evaluated the effectiveness of the Skills Training Program (STP) against traditional alcohol education and self-monitoring/assessment only interventions at risk drinkers. The goal of the study was to assess the impact participation in the STP might have on drinking-related outcome and efficacy expectancies and to understand whether changes in drinking were associated with changes in expectancies.

The STP has four basic components, each involving instruction and practice. The first component is to provide information on the effects of alcohol, responsible drinking skills, and an understanding of blood alcohol levels; the second component revolves around stress management and life skills; the third component identifies skills to manage high-risk drinking situations; and the fourth component examines alcohol-related expectancies and provides training in self-control skills (Fromme et al., 1986). They found that drinking levels significantly decreased due to participation in the prevention program, but neither outcome nor efficacy expectancies changed (Fromme et al., 1986). This did not deter them, as their discussion highlighted the need for better instruments to identify expectancies – as many of the negative consequences or expected results from drinking, like increased disinhibition might be seen as

desirable effects of drinking; and ultimately, the intervention did reduce drinking, which stimulated more research around the STP (Kilmer et al., 2014).

As research on prevention and intervention expanded, the idea of peer health education gained momentum (Sloane & Thompson, 1993). Contrary to the Straus and Bacon (1953) findings, Perkins (1985) found that college students' use of alcohol and other drugs was associated more closely with peer use than that of their family or religious affiliations. Perkins and Berkowitz (1986) surveyed over 1,116 students and found that students perceived their peers' alcohol consumption to be much more extreme than it was – 66% of students reported having moderate attitudes towards drinking (i.e. drinking is acceptable as long as it does not interfere with academics/responsibilities), but when asked about their peers' attitudes towards alcohol consumption, 63% believed their peers to hold liberal attitudes towards drinking (i.e. frequent intoxication is acceptable). The implications from this research prompted college alcohol abuse prevention programs to target individual normative reeducation, where students are provided information regarding the actual drinking norms on campus, challenging their misperceptions – this was done through peer education, programming, and mass marketing campaigns (Kilmer et al., 2014; Perkins & Berkowitz, 1986).

In 1988, the United States minimum legal drinking age (MLDA) was universally shifted to 21, as a result of grassroots efforts citing research signifying increased traffic crashes among youth with the lowering of the legal age during the 1970s (Wagenaar and Toomey, 2002). This increased MLDA impacted college drinking in some unexpected ways. George, Crowe, Abwender, & Skinner (1989) sampled students in New York and found that the increased MLDA had a minimal effect on underage students' alcohol consumption, but it did impact where they drank, resulting in increased drinking at unlicensed locations, including inside their cars. A

literature review on the increased MLDA identified positive results with a decrease in traffic accidents and alcohol consumption among youths in general; however, these findings could not be applied to college students, with only 9% of the studies done with college students considered high quality, and none finding a significant relationship between MLDA and various outcome measures (Wagenaar and Toomey, 2002).

In the 1990s, college drinking was reframed as a social problem (Dowdall, 2009). At this time, major strides in research were happening with the Harvard School of Public Health College Alcohol Study and the founding of the Higher Education Center for the Prevention of Alcohol and Other Drugs Reports (Dowdall, 2009). No longer could the research be ignored and college drinking be seen as a rite of passage; instead, it was argued that college drinking was harmful to “both the student and those in the immediate environment” (Dowdall, 2009, p. 19). Reports at this time indicated that 31% of college men consumed more than 21 drinks per week and 19% of college women consumed more than 14 drinks per week, with as many as 84% of college students reporting binge drinking with the past 90 days (Engs, Hanson, & Diebold, 1996; Vik, Carrello, Tate, & Field, 2000). Eigen (1991) stated in his white paper that college campuses “may well be a type of environmental hazard” (p. 3) noting that there are differences in prevalence of heavier and more dangerous drinking among college students versus their non-college peers. The reasons college campuses are more risky environments for heavy alcohol use is unclear, it is only the facts and patterns of reported heavy alcohol use that indicate that they are (Eigen, 1991). Eigen (1991) speculated that the college environment could be particularly hazardous because college students are at a developmental time in their lives where risk taking is common and peer acceptance is important; the cultural traditions of the institutions could play a role; targeted marketing of alcoholic beverages on campus; or maybe they are more dangerous

because students know of few alternatives to drinking on campus. Though these and many other factors were discussed in the 1990s, many ring true today – college campuses are environments where high risk drinking occurs, and how it is addressed continues to be an ongoing battle for administrators, staff, and students across the country to this day. Following is a discussion regarding the prevalence of drinking on college campuses and alcohol related consequences, and the current prevention and intervention programs colleges are implementing to address high risk drinking behaviors.

Current Prevalence, Demographic Trends, and Alcohol Related Consequences

Contrary to Eigen's (1991) ruthless comparison of college campuses to toxic waste dumps, with students facing a higher probability of encountering negative health consequences – college students and their parents enter campus believing it to be relatively safe and full of hope and educational promise. Between these two viewpoints is a middle ground, just as there are educational and recreational opportunities on college campuses, there are also harms associated with some of these new opportunities, namely alcohol consumption.

The first six weeks of freshman year is often considered a vulnerable time for high risk drinking and alcohol related consequences due to social pressures and expectations at the beginning of the year (Hingson & White, 2012; NIAAA, 2015). Though students may enter college with some previous drinking experience, around 9.9% of full-time college students try alcohol for the first time (Lipari & Jean-Francois, 2016). Overall, about 80% of college students report drinking alcohol each year (Hingson & White, 2012). In 2015, 58% of full-time college students drank alcohol in the past month, 37.9 % engaged in binge drinking, and 12.5% engaged in heavy drinking (SAMHSA, 2016a) with binge drinking rates consistently staying around 40% over the past decades (White & Rabiner, 2012).

Demographic Trends and Factors Related to Alcohol Use

Age and class level. Both positive associations and relatively little or no associations between quantity and frequency of drinking and college year have been documented (Wechsler, Dowdall, Davenport & Castillo, 1995). College students have greater levels of binge drinking up to age 21 compared to non-college peers, but from 21-25, college students decrease their binge drinking at a quicker rate than do their non-college peers (White & Rabiner, 2012).

Family history. Family history encompasses both genetic and environmental influences, but the overall impact of family history on college student drinking has been mixed. According to adoption studies and twin studies (Agrawal & Lynskey, 2008; Schuckit, 2009), the heritability rate of alcoholism is around 50-70%. Environmental risk factors also play a role, including parenting style, modeled drinking behaviors, and fetal alcohol exposure (Hawkins, Catalano, & Miller, 1992; Sher, Greykin, & Williams, 2005). Students with a positive family history of alcohol abuse endorsed greater positive alcohol expectancies, consumed more drinks per week, and experienced more consequences (LaBrie, Migliuri, Kenney, & Lac, 2010). Elliott, Carey, & Bonafide (2012) conducted a meta-analysis of 65 published papers, comprised of 89,766 participants, and found that family history had a minimal effect on alcohol consumption, but it did have stronger effects on alcohol consequences, alcohol use disorder symptoms, and other drug involvement. The results indicated that students with a family history may not consume more than other students, but they are at greater risk for issues with alcohol and other drugs (Elliott et al., 2012).

Race and ethnicity. O'Malley and Johnston (2002) found that heavy drinking is highest for white students, intermediate for Hispanic students, and lowest for black students.

Fesahazion, Thorpe, Bell, and LaVeist (2012), studied alcohol use among African American and

white populations and aimed to account for alcohol use within social and environmental contexts. The authors concluded that African Americans and whites exposed to the same social and environmental conditions had similar patterns of current alcohol use compared to the national sample indicated higher use among whites (Fesahazion et al., 2012).

Sex. One of the first studies to address binge drinking and the differences between males and females was Orford, Waller, and Peto (1974), finding males were not only fast drinkers, they also had different drinking styles and concerns about drinking. The numbers have changed since then, but the findings are similar in that alcohol use rates are greater for males than females (O'Malley & Johnston, 2002). The American College Health Association (2007) also found that male students experience more alcohol related consequences than female students.

Sexuality. According to the *National Survey on Drug Use and Health* (2015), those who identified as being gay, lesbian, or bisexual reported higher rates of alcohol use and were more likely to have substance abuse disorders in the past year related to their alcohol use than heterosexual individuals.

Living Arrangement. Drinking rates depend on living arrangements (Hingson & White, 2012; O'Malley & Johnston, 2002). Increased alcohol use is highest in fraternities and sororities, followed by campus housing (i.e. dorms, residence halls), those in off-campus housing drink less, and those that live with their parents drink the least (Hingson & White, 2012).

Mental health. Young adulthood is the time for peak onset of most mental health disorders, with 75% of those diagnosed with a mental health disorder having their first onset by age 25 (Kessler et al., 2008). Anxiety disorders and depression are the most prevalent mental health issues among college students, with 11.9% diagnosed with an anxiety disorder and 7-9% diagnosed with depression (Blanco et al., 2008; Eisenberg, Hunt, & Speer, 2013). According to

Weitzman (2014), 81.7% of college students reporting poor mental health engaged in drinking. When compared to their peers, students with poor mental health were less likely to report abstinence, and were more likely to report drinking to get drunk (Weitzman, 2014). They also reported higher levels of harm from alcohol – academic, unsafe sex, and property damage (Weitzman, 2014).

Alcohol beliefs. Osberg and colleagues (2010) describe how students entering college holding beliefs that drinking is an integral part of the college experience are at greater risk for abusing alcohol and selecting environments that promote risky drinking.

Other substance use. Approximately 20% of college students have used an illicit drug in the past month. Illicit drugs include: marijuana, cocaine, heroin, hallucinogens, inhalants, and non-medical use of prescription drugs (pain relievers, tranquilizers, stimulants, and sedatives) (Center for Behavioral Health Statistics and Quality, 2015; Lipari & Jean-Francois, 2016). The most widely used substance is alcohol, next is marijuana, cocaine, hallucinogens, heroin, and lastly, inhalants (Lipari & Jean-Francois, 2016). Additionally, about a quarter of college students endorsed smoking tobacco, with 41% reporting they smoke less than one cigarette per day (Halperin, Smith, Heiligenstein, Brown, & Fleming, 2010). Halperin and colleagues (2010) found that any smoking was linked to high-risk use of alcohol, risky driving, relational abuse, depression, decreased exercise, and use of emergency and mental health services.

Self-efficacy. Self-efficacy is the belief about one's ability to successfully cope with a situation, or in this context, resist alcohol. Multiple studies suggest a relationship between drinking refusal self-efficacy and drinking alcohol, with lower DRSE associated with increased alcohol use and problem behaviors linked to alcohol use (Ehret, Ghaudarov, & LaBrie, 2013; Oei, Hasking, & Phillips, 2007; Oei & Jardim, 2007; Oh & Kim, 2014).

Alcohol Related Consequences

According to NIAAA (2015) many college drinking issues are related to binge drinking, posing serious threats to health, safety, and academics. This section will detail various alcohol related consequences by category.

Academics. Around 25% of college students reported academic consequences from drinking (i.e. missing class, falling behind in class, doing poorly on an exam or paper, and lower overall GPA) (Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998). Binge drinkers who consumed alcohol at least 3 times a week were 6 times more likely to perform worse on a test or project and 5 times more likely to miss class than non-binge drinkers (Blanco et al., 2008; Thombs et al., 2009).

Death. Each year, 1,825 college students die due to alcohol related injuries and drunk driving – an increase from around 1,400 in 1998 (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; Hingson et al., 2009; Hingson & White, 2012)

Injury. Over 599,000 students are unintentionally injured by a student who consumed alcohol (Hingson et al., 2005).

Physical assault. Over 696,000 students are assaulted by a student who consumed alcohol (Hingson et al., 2005).

Sexual assault. Over 97,000 students are victims of alcohol-related sexual assault or date rape (Hingson et al., 2005).

Unsafe sex. Around 100,000 reported they were too intoxicated to determine whether or not they consented to having sex (Hingson, Heeren, Winter, & Wechsler, 2003).

Suicide attempts. College student drug and alcohol use has been linked to suicidal ideation and suicide attempts, with up to 1.5% of students indicating they have attempted suicide

when under the influence of drugs or alcohol (Brener, Hassan, and Barrios, 2000; Presley, Leichter, and Meilman, 1998).

Drunk driving. Hingson and colleagues (2009) found that 12 million 18-24-year-olds (both in and not in college) consumed 5 or more drinks at least one time in the past 30 days, with more than 7 million reporting driving under the influence in the past year. These drinking behaviors contribute to 5,000 injury related deaths – the leading cause of death for this age group (Hingson et al., 2009).

Memory loss. Memory loss or blacking was reported by 10% of non-binge drinkers and 54% of frequent binge drinkers (Wechsler et al., 2000).

Property damage. As demonstrated by Penn State fans in October 2016 after the Ohio State football win cost the State College borough roughly \$18,000 in damages after 5-10,000 fans rioted downtown (Annarelli, 2016). Administrators from high risk drinking schools have been and continue to be more concerned about property damage than lower risk schools (Wechsler et al., 1998).

Police involvement. Police involvement occurs at various levels on campuses – in the dorms, on campus grounds, off campus grounds, and when called in emergency situations. Students receive citations for underage drinking, public drunkenness, furnishing to minors, DUIs and various other alcohol related charges. Presley and Pimentel (2006) reported that around 8.5% of students were arrested or in trouble with police for alcohol-related issues. These charges can impact them legally and academically.

Visa status. All arrests and convictions as well as any disciplinary action carried out by the school as a result of an arrest or conviction are reported to Immigration and Customs Enforcement (American Immigration Lawyers Association [AILA], 2011; Indiana University-

Purdue University Indianapolis [IUPUI], 2017). If an international student is arrested and/or convicted of a crime, it is up to the discretion of the individual visa officer to determine whether or not the arrest or conviction will prevent an individual from renewing his or her visa (AILA, 2011; IUPIO, 2017).

Alcohol abuse and dependence. Blanco and colleagues (2008) reported that about 20% of college students meet criteria for AUD and found that treatment seeking for substance use issues was lowest when compared to other mental health issues.

Many of these consequences occur for both high risk and lower risk drinkers. Weitzman and Nelson (2004) found that between 25-33 % of college students whom experienced alcohol related consequences consumed three or four drinks per occasion. The prevalence of drinking on college campuses is an issue that needs to be addressed by campus officials in order to maintain safety for all those involved from students to the community. As evidenced by the alcohol related consequences, consumption of alcohol is leading to academic, social, sexual health, physical, and mental health, legal, and other traumatic consequences that impact not only individuals, but also their environments and community stakeholders.

Theoretical Framework

Chickering's Psychosocial Student Development Theory

“By understanding how alcohol and other drug use fits in young people’s lives, and specifically how it is embedded in their numerous developmental transitions, we can have a stronger foundation for understanding etiology and for effecting positive change” (Schulenberg & Maggs, 2002, p. 66).

College and university environments should promote the development of student talent and potentials, and do this by establishing a culture that fosters student maturation in self-esteem,

socially responsible behavior, and engagement in healthy relationships (Chickering & Reisser, 1993). In order to promote student health, wellness, and academic potentials, it is critical that campuses understand the development of students over the course of their college careers. The framework this study is working within understands college students through a developmental perspective, mainly focusing on Chickering's Seven Vectors and how they apply to alcohol use among college students.

Chickering and Reisser's (1993) classic book reviews Chickering's Seven Vectors framework, emphasizing the importance of managing emotions during times of transition. For many students entering college is a major life transition, and with this new freedom, many challenges and opportunities are navigated. Chickering's first three vectors, typically associated with college freshman and sophomores, include developing competence, managing emotions, and developing autonomy (Chickering & Reisser, 1993; Stoker, 2008). The first vector involves developing a sense of intellectual, physical and manual skills, along with interpersonal competence; the second vector emphasizing engage with and learning how to release irritations, handle fears, and work through their various emotions; and the third vector is a time when students learn that with increased trust in themselves and their feelings, they can interact with others interdependently, rather than dependently (Chickering & Reisser, 1993).

These first three vectors relate to alcohol use in that during their first year of college, students report experiencing various stressors that lead to a decline in mental health, physical health, and life satisfaction, and an increase in alcohol use, alcohol consequences, and sleep issues (Dvořáková et al., 2017; Pritchard, Wilson, & Yamnitz, 2007). Students have to navigate social situations where alcohol is involved, learning their limits, practicing feeling comfortable in social situations involving alcohol, knowing when to refuse a drink, and understanding alcohol

and their own rationalizations around their use (e.g. student expectations, social pressures, social camaraderie, and coping or tension reduction) (Labrie, Hummer, & Pedersen, 2007; NIAAA, 2015). During their first two years, developmentally they are more apt to take risks with their decreased dependence on parents and increased dependence on peers, they may take risks that increase substance use and related consequences (Arnett, 2005; Merrill & Carey, 2016; Scholl & Schmitt, 2009; van de Vorst, Engels, Meeus, & Dekovic, 2006).

As they continue to progress through the second and third vectors, students are learning how to regulate their emotions and trying to find balance between the tension of developing autonomy and wanting to belong. Researchers (Aurora & Klaneckey, 2016; Cooper, 1994) focused on college drinking recognize and explore the internal and external factors playing into student alcohol use. Cooper (1994) defined four factors, the internal (coping and enhancement) and external motives (social and conformity), linked to college student drinking. Use of alcohol for coping and enhancement purposes, provide the individual with a way to alter internal emotional experiences – both positive and negative; whereas, the use of alcohol for social and conformity reasons aims to modify the environment – gaining social rewards and facilitation and avoiding peering rejection (Kuntsche, Knibbe, Gmel, & Engels, 2005). Kuntsche and colleagues (2005) found social motives to be the most prevalent reason for alcohol consumption, with enhancement following, and few reported using for coping. They also reported that social motives were associated with moderate drinking, enhancement motives with heavy drinking, and coping motives with alcohol-related problems (Kuntsche et al., 2005). The struggle between autonomy and peer influence can contribute to identity confusion, and students may utilize alcohol to cope with this confusion (Schwartz et al., 2010). The succession through the second

and third vectors may will come with both internal and external influences, with successful students establishing a more balanced approach as they enter the fourth vector.

The next four vectors include developing mature interpersonal relationships, establishing identity, developing purpose, and developing integrity. The fourth vector, is typical for later in sophomore year and junior year, where increased appreciation for differences and capacity for intimacy occurs (Chickering & Reisser, 1993; Stoker, 2008). At this point in time, students are establishing their autonomy and are beginning to feel more confident in themselves and in their values, roles, and beliefs.

The last three vectors typically occur during junior and senior year, and at this point, students are in closer relationships, have a more stable sense of self, are more focused on academics and life after college, and they are ultimately developing congruence between personal values and socially responsible behavior (Chickering & Reisser, 29913; Stoker, 2008). Towards the end of students' college careers, they are maturing and learning how they fit into the larger society outside of college – employment, marriage, new family roles, and identity development (Eitle, Taylor, & Eitle, 2010; Gates, Corbin, & Fromme, 2016; Staff, Greene, Maggs, & Schoon, 2014)

Ultimately, Chickering and Reisser (1993) did not delve into student drinking, yet it is important to have an understanding of where students are at developmentally and emotionally when providing alcohol interventions. Bishop, Macy-Lewis, Schnekloth, Puswella, and Struessel (1997) have found that a less mature profile is linked with alcohol use and abuse, therefore if we can gain a better understanding of which vector a student may be in, we can better gauge how they might be utilizing alcohol, what factors are influencing it, and the kinds of

alcohol-related consequences they are enduring and how those are impacting them emotionally and academically.

Bandura's Self-Efficacy Theory

Self-efficacy is the belief that one has the ability to cope or perform an action to attain a desired outcome and it influences the choices one makes, the effort one puts forth, how long one persists in the face of obstacles, and how one feels (Bandura, 1997). Strong self-efficacy improves personal well-being and accomplishment (Bandura 1997). Bandura (1997) stated that people with high self-efficacy approach difficult tasks as challenges; whereas, those with low self-efficacy shy away from difficult tasks and view them as threats to self. Self-efficacy is acquired, enhanced, or decreased by four sources: (1) mastery experience, (2) vicarious experience, (3) social persuasion, and (4) physiological states.

Mastery experiences involved successfully overcoming an obstacle through persistent effort. Bandura (1997) described failures as useful and serve the purpose of building resilience as long as people are not easily discouraged by the challenge. Simple tasks are not considered mastery experiences, as they do not challenge encourage resilience, but instead lead people to believe things should come easily. Once people believe they have the ability to succeed, they can handle adversity, and rebound from failures (Bandura, 1997).

Vicarious experiences are provided through observation of others similar to the self. Seeing others modeling mastery of various tasks, enhances the observer's beliefs that they can also master similar activities and challenges (Bandura, 1997).

The third way of strengthening self-efficacy is through social persuasion. Social persuasion involves others verbally persuading an individual that they are capable of mastering certain activities. Others' input and encouragement build's the individual's perceived self-

efficacy, which leads them to try harder to succeed, and during this time, they acquire the skills and personal self-efficacy (Bandura, 1997).

Physiological states or reducing individuals' stress reactions is the fourth way to build self-efficacy. Decreasing one's stressful reactions can alter their emotions and diminish negative feelings and channel them into energizing moments that facilitate successful performances.

Drinking refusal self-efficacy DRSE is an adaptation of Bandura's self-efficacy theory – it is the belief in one's ability to refuse or resist drinking alcohol in certain situations (Oei, Hasking, and Young, 2005). The concept of DRSE was translated into an instrument called the Drinking Refusal Self-Efficacy Questionnaire-Revised Adolescent (DRSEQ-RA), which is an instrument used in this study described in chapter three.

The theories describe development of identity and the belief in one's self and their own abilities to be successful. Chickering's student development theory and Bandura's self-efficacy theory can be applied to the research linked to college alcohol consumption – challenging the idea of maturity along an age continuum, but instead maturity as a function of self-efficacy and identity development.

Demb and Campbell (2009) found that among time limited students, those who discontinue high risk drinking post-college, the mastery of developmental tasks during college aligned with either a decrease or a rapid increase, then decrease (i.e. developed mastery) in alcohol use. A qualitative study (Bulmer et al., 2016) examined excessive alcohol consumption by interviewing students utilizing a community-based participatory research (CBPR) methodology and found that students often cited maturity as a dominant theme to explain their heavy alcohol use in their early college years. The students described how they had more freedom and plenty of opportunities to drink, but after their freshman and sophomore year, the

excitement around drinking wore off, they had made friends and no longer depended on alcohol as a social lubricant, did not want to spend money on alcohol once turning 21, and ultimately, found their drinking phasing out as they accrued more responsibilities (i.e. tougher workload, pending graduation, job searching) (Bulmer et al., 2016). Schulenberg and Maggs (2002) support these statements through their summary of the literature on alcohol use and developmental theory, finding that for most students, heavy drinking may serve different purposes and meet certain expectations during college and then taper off as they shift into adulthood roles.

Together, Chickering's student development and Bandura's self-efficacy theory provide a framework that allows counselors, advisors, faculty, and staff to understand the key elements of development, including the ultimate end goal of identity formation, which integrates with development of self-efficacy through mastery, learning, social persuasion, and emotion regulation. Identity development and belief in one's capabilities to be successful may have implications for how college students utilize alcohol, in turn, enhancing alcohol intervention programs.

Alcohol Interventions

Prevention and intervention efforts addressing college student alcohol use have been underway for decades. Various attempts have been made at multiple levels, individually, community-wide, and through policy; the sections below will provide a brief review of evidence-based prevention programs and expand the discussion around the Brief Alcohol Screening and Intervention for College Students.

College Alcohol Intervention and Prevention Efforts

The NIAAA developed CollegeAIM, a resource to help college personnel choose interventions to address harmful student drinking on campus. CollegeAIM provides a matrix-based tool to assist in determining which intervention is most appropriate given the student and campus needs. The matrix breaks down interventions according to individual-level strategies and environmental-level strategies. Individual-level strategies are designed to develop knowledge, change attitudes and behaviors related to drinking, all in an effort to change student drinking behaviors that lead to decreased risks and harm (NIAAA, n.d.a). Environmental-level strategies are meant to bring about change on campus and in the community, typically focusing on reducing availability of alcohol, enforcing policy, and facilitating collaborative efforts among stakeholders (NIAAA, n.d.a). NIAAA (n.d.a) suggests that mixing strategies works best to maximize effects. My review will focus specifically on the individual-level strategies and briefly discuss environmental-level strategies. In Table 2.1, the CollegeAIM matrix is displayed for individual-level strategies rated by CollegeAIM according to cost and effectiveness.

Table 2.1

CollegeAIM Individual Level Strategies Matrix (NIAAA, n.d.a)

Lower costs \$	Mid-range costs \$\$	Higher costs \$\$\$
	Higher effectiveness	
Normative re-education: Electronic/mailed personalized normative feedback (PNF)—Generic/other Skills training, alcohol focus: Self-monitoring/self-assessment alone Personalized feedback intervention (PFI): eCHECKUP TO GO (formerly, e-CHUG)	Skills training, alcohol focus: Goal/intention-setting alone Skills training, alcohol plus general life skills: Alcohol Skills Training Program (ASTP) Brief motivational intervention (BMI): In-person – Individual (e.g. BASICS) Personalized feedback intervention (PFI): Generic/other	Multi-component education-focused program (MCEFP): AlcoholEdu [®] for College
	Moderate Effectiveness	
	Skills training, alcohol focus: Expectancy challenge intervention (ECI)—Experiential	

	Skills training, alcohol plus general life skills: Parent-based alcohol communication training Skills training, alcohol plus general life skills or general life skills only: Generic/other Brief motivational intervention (BMI): In-person—Group	
	Lower effectiveness	
Normative re-education: Electronic/mailed personalized normative feedback (PNF)—Event-specific prevention (21 st birthday cards)	Normative re-education: In-person norms clarification alone	
	Not effective	
Skills training, alcohol focus: Expectancy challenge intervention (ECI)—By proxy/didactic/discussion alone	Information/knowledge/education alone Values clarification alone	
	Too few studies to rate effectiveness	
Skills training, alcohol plus general life skills: Alcohol 101 Plus™ Personalized feedback intervention (PFI): CheckYourDrinking (beta 1.0 version) Personalized feedback intervention (PFI): College Drinker’s Check-up	Skills training, alcohol focus: Blood alcohol concentration (BAC) feedback alone Multi-component education-focused programs (MCEFP): Miscellaneous	

Provided in this table is a quick understanding of which prevention programs work and at what level. Skills based interventions, personalized feedback intervention, brief motivational intervention, and the multi-component education-focused program (MCEFP) are rated as highly effective NIAAA (n.d.a).

In 2002, the Task Force of the NIAAA examined past prevention efforts and found brief motivational enhancement strategies to be effective in altering behavior, including a reduction in alcohol consumption and alcohol related consequences (DiFulvio, Linowski, S.A., Mazziotti,

J.S., & Puleo, E, 2012). A meta-analytic review (Carey, Scott-Sheldon, Carey, & DeMartini, 2007) of individual-level interventions to reduce college student drinking supported the findings of the 2002 NIAAA Task Force. The researchers found that individual, face-to-face interventions involving the use of motivational interviewing and personalized normative feedback predicted reductions in alcohol-related problems (Carey et al., 2007). Therefore, it is not surprising that BASICS, a specific brief motivational intervention that encompasses many of the qualities and skills found to be useful in reducing consumption and related consequences, is widely used by college campuses around the country in order to address college student alcohol use. The remainder of this section will focus on BASICS and the research supporting it.

BASICS Overview

Motivational Interviewing. Before discussing BASICS, it is pertinent to understand motivational interviewing. Motivational Interviewing (MI) is an evidence-based approach that addresses and overcomes the ambivalence that prohibits many people from making changes in their lives (Miller & Rollnick, 2002). Miller and Rollnick (2002) describe MI as a skillful clinical method or style of counseling. It involves “a way of being with people” (p. 34), and though the skills and techniques of MI are important, Miller and Rollnick (2002) believe that the ‘spirit of MI’ is critical to its successful implementation. They describe three key components that comprise the ‘spirit of MI’: (1) collaboration; (2) evocation; and (3) autonomy. Collaboration involves a partnership between the counselor and the client, where the client’s expertise, opinions, and perspectives are valued and respected. Evocation or eliciting the motivation to change is critical and are enhanced when the client’s own goals and values are incorporated. Autonomy is promoted through the counselor’s facilitation of intrinsic

motivation– the counselor affirms the client’s right and ability for self-direction, and it is the client who should be presenting the arguments for change.

Along with the three key components are four general principles that underlie MI (Miller & Rollnick, 2002). These four principles include: (1) express empathy; (2) develop discrepancy; (3) roll with resistance; and (4) support self-efficacy. In Table 2.2 a summary of the four principles is included based on key components provided by Miller and Rollnick (2002).

Table 2.2

Four Principles of MI (Miller and Rollnick, 2002)

Principle	Components
1. Express empathy	<ul style="list-style-type: none"> • Acceptance facilitates change • Skillful reflective listening is fundamental • Ambivalence is normal
2. Develop discrepancy	<ul style="list-style-type: none"> • The client rather than the counselor should present the arguments for change • Change is motivated by a perceived discrepancy between present behavior and important personal goals or values
3. Roll with resistance	<ul style="list-style-type: none"> • Avoid arguing for change • Resistance is not directly opposed • New perspectives are invited by not imposed • The client is a primary resource in finding answers and solutions • Resistance is a signal to respond differently
4. Support self-efficacy	<ul style="list-style-type: none"> • A person’s belief in the possibility of change is an important motivator • The client, not the counselor, is responsible for choosing and carrying out change • The counselor’s own belief in the person’s ability to change becomes a self-fulfilling prophecy

The overarching goal of MI is to develop the client’s interest and motivation to change his behavior in a specific direction; therefore, MI follows the stages-of-change model (Prochaska, DiClemente, & Norcross, 1992) to conceptualize this movement. The five stages of change are: (1) precontemplation; (2) contemplation; (3) preparation; (4) action; and (5) maintenance (Prochaska et al., 1992). In the precontemplation stage, the client is unaware of

risks and problems with current behavior and has no intention of changing his behavior (Dimeff, Baer, Kivlahan, & Marlatt, 1999). Dimeff and colleagues (1999) note that students who engage in high-risk drinking are often in this stage. The contemplation stage is comprised of the client recognizing some risks exist and are giving thought to the idea of making changes (Dimeff et al., 1999). The preparation stage typically follows once ambivalence is resolved and clients have begun to take action on some behaviors and plan to make more changes moving forward (Dimeff et al., 1999). The action stage involves the client modifying behaviors to overcome the problem (Dimeff et al., 1999). The last stage, maintenance, includes maintaining changes and behavioral gains – preventing relapse is critical in this stage (Dimeff et al., 1999). With these stages comes motivational tasks for the counselor, as outlined below in Table 2.3 (Miller and Rollnick, 1991).

Table 2.3

Counselor Motivational Tasks (adapted from Miller and Rollnick, 1991)

Stage of Change	Counselor Motivational Tasks
Precontemplation	<ul style="list-style-type: none"> • Raise doubt • Increase the client's perception of risks and problems with current behaviors
Contemplation	<ul style="list-style-type: none"> • Tip the balance of ambivalence in the direction of change • Elicit reasons to change and identify risks of not changing • Strengthen client's self-efficacy for changing current behaviors
Preparation	<ul style="list-style-type: none"> • Help client identify best course of action to commence change • Reinforce movement in this direction
Action	<ul style="list-style-type: none"> • Continue to help client take steps towards change • Provide encouragement and positive reinforcement for action
Maintenance	<ul style="list-style-type: none"> • Teach client relapse prevention skills

Ultimately, by embracing the spirit of MI, its key components, and motivational tasks, counselors can work with clients to help free them from the ambivalence that traps them in negative cycles of self-defeating and self-destructive behaviors (Miller and Rollnick, 2002).

BASICS Intervention. BASICS, the preventative intervention program was designed for 18 to 24-year-old college students who drink alcohol heavily and have experienced or are at risk of facing alcohol related consequences (Dimeff et al., 1999). BASICS utilizes motivational

interviewing by taking a collaborative, nonjudgmental, harm-reduction approach, and requires the facilitator to work with students to help them gain more clarity around their own alcohol use by learning about the risks involved with problem drinking. BASICS is an intervention modality that falls under the umbrella of Alcohol Skills Training Program (ASTP), it includes a comprehensive curriculum that aims to reduce harmful alcohol use and related problems linked to consumption by providing cognitive behavioral strategies for moderate, lower-risk drinking (Dimeff et al., 1999).

BASICS is less intensive, more personalized and flexible than other ASTP with it being comprised of two 50-minute interview sessions (as opposed to six- to eight-session courses) and additional time after the sessions to complete self-report surveys (Dimeff et al., 1999). The first interview includes assessing the student's drinking patterns, and the second session is comprised of the therapist providing the student with personalized feedback (i.e. typical drinking patterns, normative perceptions of alcohol use, and self-reported alcohol related consequences) based on the assessments, and then delivering education around the negative behavioral consequences linked to alcohol use (Dimeff et al., 1999). Though the developers found that two sessions tended to be enough for students to make changes in behavior and reduce negative alcohol-related consequences, some students may require additional services ranging from a booster session to inpatient or outpatient treatment (Dimeff et al., 1999). Table 2.4 outlines the components of BASICS sessions one and two.

Table 2.4
BASICS Sessions Outline

	Session 1: The Initial Assessment
<i>Goals</i>	<ul style="list-style-type: none"> • Build rapport with the student • Orient student to the structure and purpose of the meetings • Establish commitment from student to participate in the intervention
<i>Components</i>	<ul style="list-style-type: none"> • Structured clinical interview

	<ul style="list-style-type: none"> • Self-report questionnaire packet (used to develop personalized feedback report) <ul style="list-style-type: none"> ○ Alcohol dependence ○ Other substance use problems ○ Psychological functioning/Psychopathology ○ Family history ○ Typical drinking patterns • Monitoring cards <ul style="list-style-type: none"> ○ Track alcohol consumption (number of drinks, over how much time, location of drinking, mood when drinking) ○ Complete between sessions
<i>Required time needed</i>	<ul style="list-style-type: none"> • 50 minutes • Quiet and private room for the clinical interview
	Session 2: The Feedback Session
<i>Goals</i>	<ul style="list-style-type: none"> • Reorient, reestablish rapport and commitment to intervention • Provide feedback and advice • Make referrals • Define next steps (further care, if necessary)
<i>Components</i>	<ul style="list-style-type: none"> • Discuss personalized feedback report <ul style="list-style-type: none"> ○ Pattern of alcohol use ○ Risks associated with use ○ Comparison to normative samples ○ Individual risk factors • Consider myths of drinking and accurate facts • Review safe strategies to reduce risks • Increase motivation to make changes to current risky behaviors • Problem solve potential barriers to change
<i>Required time needed</i>	<ul style="list-style-type: none"> • 50 minutes • Quiet and private room for feedback and goal development

The initial studies evaluating the effectiveness of BASICS was done by Marlatt and colleagues (1998). They found that after a two-year follow-up period, all high-risk drinkers sampled drank less and reported fewer alcohol-related consequences; however, those that attended BASICS had a greater deceleration in drinking rates, alcohol related consequences, and lower alcohol dependence than those in the control group (Marlatt et al., 1998). Baer, Kivlahan, Blume, McKnight, and Marlatt (2001), added to these findings with their 4-year follow-up

indicating greater declines in alcohol use and alcohol related consequences for those that received BASICS. Additional research of BASICS in college settings (Borsari & Carey, 2000; Larimer et al., 2001; Murphy et al., 2001; Turrisi et al., 2009) has had mixed results in terms of effectiveness among different variables, with some treatment groups drinking significantly less than the control group for number of drinks consumed per week, number of times consuming alcohol in the past month, and frequency of binge drinking in the past month (Borsari & Carey, 2000); while another study finding a drop in number of drinks per week, but not quantity or frequency (Larimer et al., 2001). A more recent study (Hustad et al., 2014) found that both individually delivered and group delivered BASICS resulted in decreased peak estimated BAC levels and number of negative alcohol-related consequences at 1-, 3-, and 6-months follow-up.

From the research, BASICS is an appropriate intervention for college students – as it addresses some of college campuses main concerns, student binge drinking and reducing it. However, within this research there were limitations around the extent to which change occurred and not all goals of the research being met – for instance, in Borsari and Carey (2000), the treatment group reduced drinking, but did not decrease in number of alcohol-related consequences.

I seek to understand if programs like BASICS are oversimplifying college students and not emphasizing other pertinent individual factors that impact college student development and decision-making such as their mental health, personality traits, college drinking beliefs, and self-efficacy. Addressing these individual factors present opportunities for students to better understand themselves and initiate and maintain changes. Integrating these individual factors has the potential to enhance the work beyond BASICS and that of mental health counselors, career counselors, health educators, advisors, administrators, and professors, with the students

they serve by addressing drinking behaviors, academic goals, and promoting student health and wellness.

CHAPTER 3: METHODOLOGY

Research Design

The purpose of this study was to inform college student drinking interventions by developing an understanding of the individual factors that influence level of dependence and alcohol related consequences. I posed three research questions to explore these factors.

RQ1: Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), number of alcohol related consequences (YAACQ), self-efficacy (DRSE), family history, and other drug use, predict level of dependence (AUDIT)?

RQ2: Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), level of dependence (AUDIT), self-efficacy (DRSE), family history, and other drug use, predict number of alcohol related consequences (YAACQ)?

RQ3: Does class level, age, self-efficacy (DRSE), impulsivity (SURP subscale), and college alcohol beliefs (CLASS) predict level of dependence (AUDIT)?

Participants

Prospective participants in the study included undergraduate students attending a 4-year, state-related university with an enrollment over 44,000 students. Students eligible to participate in the study were mandated to receive an alcohol intervention after violating a campus alcohol policy, receiving medical attention for alcohol-related issues, and/or were arrested by police on campus or in the surrounding area. Per university policy and via occasional court orders, mandated students are required to attend an on-campus location to receive an alcohol intervention program. The students were charged two-hundred dollars for the program and were

responsible for additional fees for missing scheduled appointments. Once students completed the program, they complied with university policy and/or court orders.

Screened in this study were 547 participants, with 278 participants meeting eligibility criteria. Of the 278 eligible participants, one was eliminated due to missing data (this will be discussed further under inclusion/exclusion criteria section). The final number of participants was N=277. Of the participants, 66.8% (n=185) identified as male and 33.1% (n=92) identified as female. Their ages ranged from 18-24 years, with the average age of 19.01 years (SD=1.15). Ethnicity included 7 individual categories: Asian, Black, Hawaiian, Hispanic, Other, Native American, and White. The participants could select multiple categories, resulting in the following participant identities: Asian (5.0%), Black (1.8%), Black-Hispanic (0.7%), Hawaiian (0.4%), Hispanic (4.0%), Hispanic-Hawaiian (0.4%), Other (1.4%), White (82.0%), White-Asian (0.4%), White-Black-Hispanic-Asian-Native American-Hawaiian-Other (0.4%), White-Black-Native American (0.4%), White-Hispanic (1.8%), White-Native American (0.7%), White-Native American-Hawaiian (0.4%).

The class composition included 52.0% freshman, 22.0% sophomores, 17.3% juniors, and 8.7% seniors. A majority of the students lived on campus in the residence halls (64.6%) and the remainder lived off campus in houses, apartments, Greek residences, or at home with parents/guardians. Six (2.2%) students identified as international students. Fifty-four (19.5%) participants identified as active members or pledges within the Greek community. Twenty-two (7.9%) participants identified as college athletes. Demographics for study participants are summarized in Table 3.1.

Table 3.1
Demographics of Sample (N=277)

	<i>n</i>	% of sample	<i>m</i>	<i>sd</i>
<i>Sex</i>				
Male	185	66.8		
Female	92	33.1		
<i>Age</i>				
			19.01	1.148
18	114	41.2		
19	89	32.0		
20	46	16.5		
21	17	6.1		
22	7	2.5		
23	3	1.1		
24	1	.4		
<i>Race/Ethnicity</i>				
Asian	14	5.1		
Black	5	1.8		
Black, Hispanic	2	0.7		
Hawaiian	1	0.4		
Hispanic	11	4.0		
Hispanic, Hawaiian	1	0.4		
Other	4	1.4		
White	228	82.3		
White, Asian	1	0.4		
White, Black, Hispanic, Asian, Native American, Hawaiian, Other	1	0.4		
White, Black, Native American	1	0.4		
White, Hispanic	5	1.8		
White, Native American	2	0.7		
White, Native American, Hawaiian	1	0.4		
<i>International Student</i>				
Yes	6	2.2		
No	271	97.8		
<i>Residence</i>				
Off campus house or apartment	79	28.4		
At home with parents/guardians	2	0.7		
On campus residence hall	179	64.6		
Fraternity House	9	3.2		
Sorority Floor	4	1.4		
Other	4	1.4		

<i>Year in College</i>		
Freshman	144	52.0
Sophomore	61	22.0
Junior	48	17.3
Senior	24	8.7
<i>Greek Status</i>		
None	223	80.5
Active Member	29	10.5
Pledge	25	9.0
<i>Athletes</i>		
Yes	22	7.9
No	255	92.1

Note. n = number, m = mean, sd = standard deviation

Student violations included underage drinking, in the presence of alcohol, public drunkenness, supplying to minors, party responsibility, medical complications treated at the local emergency department, hosting people in residence hall room and alcohol and underage people are present, driving under the influence, disorderly conduct, criminal mischief, public urination, trespassing, and littering. Underage drinking was involved in 52.5 % of the violations.

Data Collection

Recruitment. This study was IRB approved. The research team began recruiting students on September 15, 2010 and ended on November 19, 2010. Mandated students were asked to participate in the study after they arrived for their initial session. During the initial session, students signed an informed consent and were asked to complete a three-part survey: the first part included a screening questionnaire; the second part included questions about the event that brought them to BASICS; and the third part was a survey that included demographic questions and additional measures. The first part included three screening questionnaires including the Patient Health Questionnaire (PHQ-9; Spitzer, Kroenke, & Williams, 1999) to assess for suicidal ideation, the Overall Anxiety and Severity and Impairment Scale (OASIS; (Norman, Cissell, Means-Christensen, & Stein, 2006) to assess for level of anxiety, and the

Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) to assess for level of alcohol dependence.

Once students completed the first portion, the health educator would complete the second part of the survey with the student that described the details of their event, including where they were drinking, how many drinks they consumed, over how much time they consumed the alcohol, and the specific citations and policy violations they received from court and/or the university. After the health educator and student completed this portion, the student was asked to complete the remainder of the survey without the health educator present. The remainder of the survey included various instruments, such as: Drinking Refusal Self-Efficacy Questionnaire-Revised Adolescent Version (DRSEQ-RA; Young, Hasking, Oei, & Loveday, 2007), the Substance Use Risk Profile Scale (SURP; Woicik, Stewart, Pihl, & Conrod, 2009), the College Life Alcohol Salience Scale (CLASS; Osberg et al., 2010), and the Young Adult Alcohol Consequences Questionnaire (YAACQ; Read et al., 2006).

Upon completion of the entire survey, the software, DatStat Illume™ was used to convert the answers into a personalized normative feedback report (PNF). The PNF was utilized in the second session to discuss typical drinking patterns, social norming graphics, personal BAC levels, health and monetary costs of drinking, family history, other drug use, risks of mixing alcohol and medications, risky behaviors, alcohol related consequences, safe strategies, readiness to change, and an opportunity to create a goal around change regarding future alcohol use.

Exclusion/inclusion criteria. In order to be included in the study, participants needed to meet certain criterion. The AUDIT was used specifically to screen for eligibility, as those who scored a 16 or higher on the measure were not included in the study (Hustad et al., 2014). A score of 16 was utilized based on past research (Babor, Higgins-Biddle, Saunders, & Monteiro,

2001; Saunders et al., 1993) asserting that scores of 16 or lower indicate low to hazardous alcohol use, whereas scores of 16 or higher represent high to very high use of alcohol. In addition to the AUDIT score being below 16, students had to be 18 years old or older and did not report suicidal ideation on the PHQ-9 (Hustad et al., 2014). Those who did not meet the criteria attended individual sessions or were referred on for more intensive alcohol use intervention provided by campus counseling services. Those that did meet criteria were split into two different groups – those receiving individual BASICS and those receiving group BASICS (see Figure 3.1. for the participant flow diagram of this process). This current study focuses on both groups since the initial assessment and measures delivered in the first session are of interest to this study.

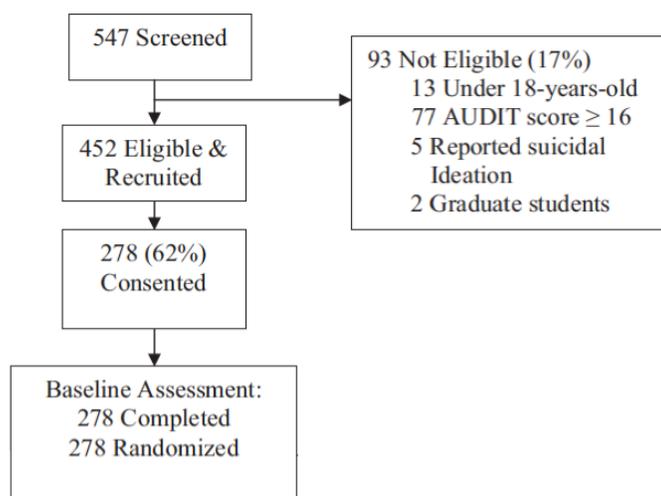


Figure 3.1: Participant Flow Diagram (Hustad et al., 2014).

Instruments/Measures

AUDIT Alcohol Use Disorders Identification Test. (Saunders et al., 1993) was used in this study as a screening measure to identify levels of alcohol use among college students. The AUDIT contains 10 items, with 3-5 possible answers located on a Likert scale, each answer choice ranging in 0-4 points to be used in the overall scoring. Scores of 16 or higher may

indicate high or very high alcohol use severity or dependency (Babor et al., 2001; Saunders et al., 1993). It is broken down into three domains – hazardous alcohol use (questions 1, 2, 3), dependence symptoms (questions 4, 5, 6), and harmful alcohol use (questions 7, 8, 9, 10) (Babor et al., 2001). Hustad (as cited in Atkinson, 2017) reported that the AUDIT had a reliability of $\alpha = 0.5704$, for the total scale. See Table 3.2 for review of domain and item content of the AUDIT.

It was developed to screen for hazardous drinking, harmful drinking, or alcohol dependence in turn assisting practitioners in identifying people who would benefit from reducing alcohol use (Babor et al., 2001). For over two decades, the AUDIT has been developed, evaluated, and found to be an accurate measure of risk across various demographics (age, gender, cultures) (Babor et al., 2001). Several studies (Fleming, Barry, McDonald, 1991; Hays, Merz, & Nicholas, 1995) have found the AUDIT to be reliable and indicate high internal consistency. Babor and colleagues (2001) also discussed the advantages of the AUDIT including, cross-national standardization, it was brief and flexible, consistent with ICD-10 definitions of alcohol dependence and harmful alcohol use, and it focused on recent alcohol use. Overall, a systematic review of the literature concluded that the AUDIT was the best screening instrument for a range of populations and alcohol problems, when compared to others like the CAGE and the MAST (Fiellin, Carrington, & O'Connor, 2000).

Table 3.2
Domains and Content of AUDIT (Babor et al., 2001)

Domains	Question Number	Item Content
Hazardous Alcohol Use	1	Frequency of drinking
	2	Typical quantity
	3	Frequency of heavy drinking
Dependence Symptoms	4	Impaired control over drinking
	5	Increased salience of drinking
	6	Morning drinking
Harmful Alcohol Use	7	Guilt after drinking
	8	Blackouts
	9	Alcohol-related injuries

	10	Others concerned about drinking
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CLASS College Life Alcohol Salience Scale. (Osberg et al., 2010) is a 15-item measure that assesses college students' beliefs about alcohol and the college experience. Statements were rated on a Likert scale from 1= Strongly disagree to 5 = strongly agree and included items like, "Parties with alcohol are an integral part of college life" and "Drinking alcohol is a social event in which every college student partakes". Internal consistency across three samples ranged between $\alpha = .90-.94$ (Osberg et al., 2010).

DRSEQ-RA Drinking Refusal Self-Efficacy Questionnaire-Revised Adolescent Version. (Young, Hasking, Oei, & Loveday, 2007) is a 19-item questionnaire used to screen for one's internal beliefs about resisting alcohol. The questions are based on three factors, social pressure refusal self-efficacy, opportunistic refusal self-efficacy, and emotional relief self-efficacy. Each question was scored on a Likert scale from 1 = "I am very sure I could not resist drinking" to 6 = "I am very sure I could resist drinking", and then summed for a total score. The DRSEQ-RA had evidence of good internal consistency for the total subscale ($\alpha = .96$) and the three subscales: social pressure ($\alpha = 0.87$), emotional relief ($\alpha = 0.90$), and opportunistic ($\alpha = 0.90$) (Young et al., 2007). Hustad (as cited in Atkinson, 2017) reported that the DRSEQ-RA had a reliability of $\alpha = 0.9032$. See Table 3.3 for the questions related to the three subscales.

Table 3.3
DRSEQ-RA Questions and Subscales

Questions	Factor
4,6,9,12,15	Social pressure refusal self-efficacy
2,7,10,13,16,18,19	Emotional relief self-efficacy
1,3,5,8,11,14,17	Opportunistic refusal self-efficacy

OASIS Overall Anxiety Severity and Impairment Scale. (Norman, Cissell, Means-Christensen, & Stein, 2006) is a five-item screening that measures the frequency and severity of

anxiety. The participant is asked to consider various symptoms of anxiety (e.g., worries, flashbacks, panic attacks) they have experienced within the past week. Questions included, “In the past week, when you have felt anxious, how intense or severe was your anxiety?” and “In the past week, how much has anxiety interfered with your social life and relationships?”. Each question is answered on a Likert scale of 0-4 and summed for a total score. The OASIS has been found to have good internal consistency, test-retest reliability, and convergent/discriminant validity (Campbell-Sills et al., 2009; Norman et al., 2006). Within this study, participants who scored ≥ 8 , then they were referred to counseling services. Hustad (as cited in Atkinson, 2017) reported that The OASIS had a reliability of $\alpha = 0.8445$.

PHQ-9 Patient Health Questionnaire. (Spitzer, Kroenke, & Williams, 1999) is a 10-question depression screening that screens, diagnosis, monitors, and measures the severity of depression. The instructions asked participants, “Over the last 2 weeks, how often have you been bothered by any of the following problems?” The questions included symptoms of depression such as: 2) Feeling down, depressed or hopeless; 6) Feeling bad about yourself - or that you’re a failure or have let yourself or your family down; and the questions utilized for eligibility, 9) Thoughts that you would be better off dead or of hurting yourself in some way. Questions 1 – 9 were scored on a Likert scale of 0-3, where 0= “Not at all”, 1= “Several Days”, 2= “More than half the days”, 3= “Nearly every day”. Question 10, “If you checked off any problems, how difficult have those problems made it for you to do your work, take care of things at home, or get along with other people?” was scored as 0 = “Not difficult at all” to 3= “Extremely difficult”. The scores were summed and participants with a score of ≥ 10 were referred to counseling services (see Table 3.4 for scoring). Hustad (as cited in Atkinson, 2017) reported that the PHQ-9 had a reliability of $\alpha = 0.7757$.

Table 3.4
PHQ-9 Scoring and Provisional Diagnosis

PHQ-9 Score	Provisional Diagnosis
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

SURP The Substance Use Risk Profile Scale. (Woicik, Stewart, Pihl, & Conrod, 2009) is a 23-item measure based on a model of personality risk for substance abuse. The model hypothesized that four personality dimensions, hopelessness, anxiety sensitivity, impulsivity, and sensation seeking, differentially relate to specific patterns of substance use (Woicik et al., 2009). The 23 items were answered on a Likert scale of 1= “Strongly disagree” to 4 = “strongly agree”, with statements including, “I often don’t think things through before I speak” and “I usually act without stopping to think” to “I feel proud of my accomplishments” and “I am very enthusiastic about my future”. Items 1, 4, 7, 13, 20, and 23 required an inversion of the respondent’s score. The SURP was found to have internal reliability on the four personality dimensions: hopelessness ($\alpha = 0.86$), anxiety sensitivity ($\alpha = 0.61$), impulsivity ($\alpha = 0.64$) and sensation seeking ($\alpha = 0.70$) (Woicik et al., 2009). See table 3.5 for SURP questions and coinciding personality dimensions.

Table 3.5
SURP Personality Dimensions

Questions	Personality Dimension
1,4,7,13,17,20,23	Hopelessness
2,5,11,15,22	Impulsiveness
8,10,14,18,21	Anxiety sensitivity

YAACQ The Young Adult Alcohol Consequences Questionnaire (Read et al., 2006) was utilized in this study to understand the total number of negative alcohol-related

consequences in the past 30 days. It is a 48-item inventory that was specifically created to measure diverse alcohol-related consequences in college students (Kahler, Hustad, Barnett, Strong, & Borsari, 2008). It asks the participant to specify “yes” or “no” to having experienced a specified alcohol-related consequence and calculates the total “yes” responses for a score. The YAACQ is broken down into eight subscales of alcohol-related consequences: social-interpersonal consequences, impaired control, self-perception, self-care, risk behaviors, academic/occupational consequences, physical dependence, and blackout drinking (Read et al., 2006). In order to develop these subscales, Read and colleagues (2006) utilized confirmatory factor analyses to support an eight-factor solution, finding all factors loading on a single, higher-order factor. All eight subscales had an internal reliability ranging between $\alpha = .70-.91$ (Read et al., 2006). Their study also described concurrent validity of the YAACQ, the RAPI, and other drinking measures, finding that the YAACQ was significantly, positively correlated with scores from the RAPI and past 90-day drinking quantities and frequencies and negatively correlated with grade point averages (GPAs). The findings from Read and colleagues (2006) were replicated in a study done by Keough, O'Connor, and Read (2016). Keough and colleagues (2016) found similar results utilizing a confirmatory factor analysis for the eight subscales and also find correlations with weekly alcohol use and binge drinking.

Variables

Independent Variables (IV)

Age. The participants' ages were found in the third part of the survey as part of the demographic questions section. This question was a free-response answer and participants entered the number reflective of their age. This variable was recoded as 0 = 18, 1 = 19, 2 = 20, 3 = 21+. This variable was included in research question three.

Alcohol related consequences. The number of alcohol related consequences was measured by the YAACQ (Read et al., 2006) and was included in research question one as an independent variable.

Anxiety. The participants' levels of anxiety were measured by the OASIS (Norman et al., 2006) and these scores were included in research questions one and two.

Class level. The participants' class levels were found in the third part of the survey as part of the demographic questions section. The variable statement was, "Current year in college" with the scale being 0 = "underclassmen" to 1 = "upperclassmen". Underclassmen included freshman and sophomore students and upperclassmen included juniors, seniors, and graduate students. This variable was included in research question three.

College drinking beliefs. The participants' beliefs about the importance of drinking alcohol in college were measured by the CLASS (Osberg et al., 2010) and these scores were included in research question four.

Depression. The participants' levels of depression were measured by the PHQ-9 (Spitzer et al., 1999) and this variable was included in research questions one and two.

Family history. The participants' family history was measured with six questions, each stating, "Do you think that your [category of biological family member: mother, father, sibling, cousin, grandparent, aunt/uncle] is/was a problem drinker?" Possible answers were, 0 = "No", 1 = "Yes" and -9 = "Don't know/No answer". Each participant was then given a total score of either 0 = "No", 1 = "Yes" and -9 = "Don't know/No answer", creating one variable for family history. This variable was included in research questions one and two.

Other drug use. This variable was obtained through 18 questions asking, "Within the last 30 days, on how many days did you use: [drug]?", with this study focusing on cigarettes,

tobacco from a water pipe (hookah), cigars, little cigars, clove cigarettes, smokeless tobacco, and marijuana. These questions were evaluated on a Likert scale of 0 = “Never used” to 7 = “Used daily”. Other drug use was utilized in research questions one and two.

Personality traits - SURP scales. Personality traits including introversion-hopelessness, anxiety sensitivity, and impulsivity are SURP (Woicik et al., 2009) subscales and were used in research questions one, two, and four.

Self-efficacy. Participants’ self-efficacy was measured by the DRSEQ-RA (Young et al., 2007), where higher scores indicated belief in ability to resist drinking. This variable was used in research questions one, two, three, and four.

Dependent Variables

Alcohol related consequences. The number of alcohol related consequences was measured by the YAACQ (Read et al., 2006) and was included in research question two as a dependent variable.

Level of dependence on alcohol. The participants’ level of dependence on alcohol were measured by the AUDIT (Saunders et al., 1993) and this variable was included in research questions one, three, and four.

The instruments/measures and variables listed above are summarized below in Table 3.6.

Table 3.6
Summary of Variables, Instruments/Measures, and Coding

Variables	Instrument/Measure	Scale/Coding
Age (IV)	'Age' – text entry	Recoded as 0 = 18, 1 = 19, 2 = 20, 3 = 21+.
Alcohol Related Consequences (IV/DV)	YAACQ The Young Adult Alcohol Consequences Questionnaire (Read et al., 2006)	0 = No, 1 = Yes Answers totaled to create YAACQ score
Anxiety (IV)	OASIS Overall Anxiety Severity and Impairment Scale (Norman, Cissell, Means-Christensen, & Stein, 2006)	Likert Scale: 0-4 Varied responses ('none' to 'extreme', 'none' to 'all the time') Answers totaled to create OASIS score
Class Level (IV)	'Current year in college'	Scale: 0-4 ('Freshman' to 'Graduate Student') Recoded as 0 = "underclassmen" to 1 = "upperclassmen"
College Drinking Beliefs (IV)	CLASS College Life Alcohol Saliency Scale (Osberg et al., 2010)	Likert Scale: 1-5 'Strongly disagree' to 'Strongly agree'
Depression (IV)	PHQ-9 Patient Health Questionnaire (Spitzer, Kroenke, & Williams, 1999)	Likert Scale: 0-3 'Not at all' to 'Nearly every day'
Family History (IV)	Do you think your ____ is/was a problem drinker?	0 = 'No', 1 = 'Yes' and -9 = 'Don't know/No answer' If indicated 'yes' for any, recoded as 'yes' overall, etc.
Level of Dependence (IV/DV)	AUDIT Alcohol Use Disorders Identification Test (Saunders et al., 1993)	Likert Scale: 0-4 Varied responses ('never' to 'daily or almost daily'; 'no', 'yes, not in last year,' or 'yes, during last year') Answers totaled to create AUDIT score
Other Drug Use (IV)	Specific substances: cigarettes, tobacco from a water pipe (hookah), cigars, little cigars, clove cigarettes, smokeless tobacco, and marijuana	Likert scale: 0-7 'Never used' to 'used daily'
Personality Traits (IV)	SURP The Substance Use Risk Profile Scale (Woicik, Stewart, Pihl, & Conrod, 2009)	Likert scale: 1-4 'Strongly disagree' to 'Strongly agree' Subscales: Anxiety-Sensitivity, Impulsivity, Introversion-Hopelessness
Self-Efficacy (IV)	DRSEQ-RA Drinking Refusal Self-Efficacy Questionnaire-Revised Adolescent Version (Young, Hasking, Oei, & Loveday, 2007)	Likert Scale: 1-6 'I am very sure I could NOT resist drinking' to 'I am very sure I could resist drinking' Mean score used

Data Analysis

To examine these four research questions, I utilized a quantitative research approach for this study that included both descriptive statistics and multiple linear regression. Data will be analyzed using Statistical Package for the Social Sciences (SPSS) software, version 25.0, including descriptive and inferential statistics for the correlations and multiple regression. The data will be analyzed using univariate, bivariate, and multivariate statistics as recommended by Creswell (2014). The data set will be reviewed to examine accuracy, distributions, outliers, and missing values. The descriptive statistics were used to provide a foundation for the data analysis, they described and summarized the basic features of the data. Outlined below is a description of how each research question will be analyzed.

RQ1. Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), number of alcohol related consequences (YAACQ), self-efficacy (DRSE), family history, and other drug use, predict level of dependence (AUDIT)?

A multiple linear regression was conducted to evaluate if the independent variables – depression, anxiety, introversion-hopelessness, anxiety sensitivity, impulsivity, alcohol related consequences, self-efficacy, family history, and other drug use – predicted the dependent variable, level of dependence. The following regression equation was used: $\hat{Y} = b_0 + b_1 * x_1 + b_2 * x_2 + b_3 * x_3 \dots b_p * x_p$. Where \hat{Y} = the predicted or expected value of the dependent variable, b_1 through b_p = estimated regression coefficients, x_1 through x_p = independent/predictor variables, and b_0 = is the value of Y when all of the IVs are equal to zero (Chatterjee & Simonoff, 2013).

Before running a multiple regression, assumptions had to be met, including: linear relationship, homoscedasticity, independent errors, outliers, variance in predictors,

multicollinearity, and normally distributed residuals (Strand, Cadwallader, & Firth, 2011). Once these assumptions were met, the regressions for each research question could be run.

The multiple linear regressions required entering all of the independent variables into the model at one time and were evaluated by what they added to the prediction of the dependent variable. The F-test was used to evaluate whether the independent variables together predict the dependent variable. R-squared was utilized to understand how much variance in the dependent variable was accounted for by the collective independent variables. The *t*-test determined the significance of each predictor and beta coefficients. When a significant predictor was identified as significant, this meant that for every unit increase in the independent variable, the dependent variable would increase or decrease by the number of unstandardized beta coefficients. The results of these data analyses are presented in Chapter 4.

RQ2. Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), level of dependence (AUDIT), self-efficacy (DRSE), family history, and other drug use, predict number of alcohol related consequences (YAACQ)?

A multiple linear regression was conducted to evaluate if the independent variables – depression, anxiety, introversion-hopelessness, anxiety sensitivity, impulsivity, self-efficacy, family history, and other drug use – predicted the dependent variable, number of alcohol related consequences. The following regression equation was used: $\hat{Y} = b_0 + b_1 * x_1 + b_2 * x_2 + b_3 * x_3 \dots b_p * x_p$. Where \hat{Y} = the predicted or expected value of the dependent variable, b_1 through b_p = estimated regression coefficients, x_1 through x_p = independent/predictor variables, and b_0 = is the value of Y when all of the IVs are equal to zero (Chatterjee & Simonoff, 2013).

Before running a multiple regression, assumptions had to be met, including: linear relationship, homoscedasticity, independent errors, outliers, variance in predictors, multicollinearity, and normally distributed residuals (Strand, Cadwallader, & Firth, 2011). Once these assumptions were met, the regressions for each research question could be run.

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RQ3. Does class level, age, self-efficacy (DRSE), impulsivity (SURP subscale), and college alcohol beliefs (CLASS) predict level of dependence (AUDIT)?

A multiple linear regression was conducted to evaluate if the independent variables – class level, age, self-efficacy, impulsivity, and college alcohol beliefs – predicted the dependent variable, level of dependence. The following regression equation was used: $\hat{Y} = b_0 + b_1 * x_1 + b_2 * x_2 + b_3 * x_3 \dots b_p * x_p$. Where \hat{Y} = the predicted or expected value of the dependent variable, b_1 through b_p = estimated regression coefficients, x_1 through x_p = independent/predictor variables, and b_0 = is the value of Y when all of the IVs are equal to zero (Chatterjee & Simonoff, 2013).

Before running a multiple regression, assumptions had to be met, including: linear relationship, homoscedasticity, independent errors, outliers, variance in predictors,

multicollinearity, and normally distributed residuals (Strand, Cadwallader, & Firth, 2011). Once these assumptions were met, the regressions for each research question could be run.

The multiple linear regressions required entering all of the independent variables into the model at one time and were evaluated by what they added to the prediction of the dependent variable. The F-test was used to evaluate whether the independent variables together predict the dependent variable. R-squared was utilized to understand how much variance in the dependent variable was accounted for by the collective independent variables. The *t*-test determined the significance of each predictor and beta coefficients. When a significant predictor was identified as significant, this meant that for every unit increase in the independent variable, the dependent variable would increase or decrease by the number of unstandardized beta coefficients. The results of these data analyses are presented in Chapter 4.

Chapter 4: RESULTS

In this chapter, I provide a summary of the results from the data analysis for my three research questions. Information from the preliminary data analysis, univariate analyses, bivariate correlational analyses, and the results of the regression analyses will be discussed in this chapter.

Preliminary Data Analysis

Data Cleaning

Data was collected from undergraduate students attending a 4-year, state-related university with an enrollment over 44,000 students beginning in 2010 and concluded in 2012. The initial screening included 547 participants, with 278 meeting eligibility (after the inclusion criteria was met as discussed in Chapter 3). After observing frequencies for each variable, one participant was eliminated from the current study due to missing data, leaving the total number of participants included in the data analyses at $N=277$. Using the SPSS Explore function for each variable, the preliminary analysis examined the high and low values, skewness and kurtosis values, and quartile values.

Missing data. According to Soley-Bori (2013), if a case has missing data for any of the variables, exclude that case from the analysis since it does not exclude a large segment of the original sample. The advantages of doing this is that it requires no special computational methods needed and it can be used with any type of statistical analysis. Participant #235 was excluded from the data analysis due to missing self-reported data on the variables included in the data analyses.

Outliers. There are no set conventions for determining an extreme outlier, however, SPSS determines outliers in relation to boxplots (Weinberg & Abramowitz, 2008). Boxplots are comprised of the interquartile range (Weinberg & Abramowitz, 2008). SPSS uses a circle to

denote any outliers that are farther than 1.5 interquartile ranges, yet closer than 3 interquartile ranges from the nearer edge of the box; and SPSS uses a star to denote outliers that are farther than 3 interquartile ranges from the nearer edge of the box (Weinberg & Abramowitz, 2008). Those with extreme outliers are considered to have more extreme skews of the distributions (Weinberg & Abramowitz, 2008).

The SPSS Explore function was used to generate box plots for each variable in this study, revealing no substantial issues due to outliers. Only one variable, CLASS total, with level of dependence (AUDIT) as the dependent variable, had an extreme outlier (participant #175). Two variables, with alcohol related consequences as the dependent variable, had extreme outliers: class beliefs (CLASS total) (participants #27, 241, 99, 257) and level of dependence (AUDIT) (participants #33, 241, 203). Aguinis, Gottfredson, and Joo (2013) provide an overview of best practices for defining, identifying, and handling outliers because there are not clear guidelines on how researchers should handle outliers. One of the ways they recommended handling outliers, is by keeping them, cautioning that by removing them may better support the goal of the study which can become a dangerous practice. When keeping outliers, researchers should acknowledge they exist, but do nothing to the outliers (Aguinis et al., 2013). Based on this information and the minimal number of outliers, the outliers were kept in the analyses.

Study Participants

Screened in this study were 547 participants, with 278 participants meeting eligibility criteria. Of the 278 eligible participants, one was eliminated due to missing data. The final number of participants was N=277. The demographics of the participants include 66.8% (n=185) identified as male and 33.1% (n=92) identified as female. Their ages ranged from 18-24 years, with the average age of 19.01 years (SD=1.15). Ethnicity included 7 individual categories: Asian, Black,

Hawaiian, Hispanic, Other, Native American, and White. The participants could select multiple categories, resulting in the following participant identities: Asian (5.0%), Black (1.8%), Black-Hispanic (0.7%), Hawaiian (0.4%), Hispanic (4.0%), Hispanic-Hawaiian (0.4%), Other (1.4%), White (82.0%), White-Asian (0.4%), White-Black-Hispanic-Asian-Native American-Hawaiian-Other (0.4%), White-Black-Native American (0.4%), White-Hispanic (1.8%), White-Native American (0.7%), White-Native American-Hawaiian (0.4%).

The class composition included 52.0% freshman, 22.0% sophomores, 17.3% juniors, and 8.6% seniors. A majority of the students lived on campus in the residence halls (64.6%) and the remainder lived off campus in houses, apartments, Greek residences, or at home with parents/guardians. Six (2.2%) students identified as international students. Fifty-four (19.5%) participants identified as active members or pledges within the Greek community. Twenty-two (7.9%) participants identified as college athletes.

Descriptive Univariate Analysis of Variables

An analysis of the data (N=277) provides descriptive statistics for each variable included in the study. Table 4.1 provides a summary of the variables including measures of mean, standard deviation, median/interquartile range (IQR), low value, high value, and skew value.

These measures are utilized to determine normality of the variables used in this study. George and Mallery (2002) indicated that descriptive statistics for categorical variables are deemed useless, therefore, they were not included in Table 4.1. With a larger sample (N=277), Tabachnick and Fidell (2007) recommend looking at the shape of the distribution – this can be done using histograms or Normal Q-Q Plots (Pallant, 2007). Skew values were included in the analysis, and Kline (2005) suggests that skew values be less than ± 3 . However, Tabachnick and Fidell (2007) purported that with reasonably large samples (200+) threats of skewness and

kurtosis are reduced and do not make real difference in the analysis of the data. Utilizing the Normal Q-Q Plots and the data found in Tables 4.1, I determined that the distribution of scores were reasonably normal (with the exception of smokeless tobacco at a skew value of 3.868). This is acceptable in the social sciences and deemed a reflection of the nature of the construct being measured rather than a problem with the scales (Pallant, 2007).

Table 4.1
Descriptive Statistics for Study Variables

Variable (possible values)	N	Mean	SD	Median/IQR	Actual Low Value	Actual High Value	Skew Value
AUDIT score (0-15)	277	7.98	3.62	8.00/8.00	0	15	-.091
Anxiety (0-20)	277	2.97	2.751	2.00/2.00	0	13	1.346
Depression (0-27)	277	2.33	2.487	2.00/2.00	0	17	2.307
Cigarettes (0-7)	277	.88	1.600	0.00/0.00	0	7	2.255
Tobacco from a water pipe (hookah) (0-7)	277	.71	.950	0.00/0.00	0	5	1.380
Cigars, little cigars, clove cigarettes (0-7)	277	.61	.921	0.00/0.00	0	7	2.402
Smokeless tobacco (0-7)	277	.32	.946	0.00/0.00	0	6	3.868
Marijuana (pot, weed, hashish, hash oil) (0-7)	277	1.14	1.641	1.00/1.00	0	7	1.767
Number of Consequences (0-48)	277	5.90	5.169	5.00/5.00	0	23	1.028
Self-efficacy (0-6)	277	5.53	.622	6.00/6.00	1	6	-1.902
Hopelessness (0-28)	277	10.71	3.228	10.00/10.00	7	25	.936
Impulsivity (0-20)	277	9.64	2.101	10.00/10.00	5	18	.124
Anxiety Sensitivity (0-20)	277	12.21	2.567	12.00/12.00	5	18	-.359
College Alcohol Beliefs (0-75)	277	41.01	9.198	41.00/41.00	19	70	.200

Bivariate Correlational Analysis

A zero-order bivariate correlational analysis was run on the data (N=277) in order to determine the relationships between the multiple variables used in this study. The bivariate correlation function within SPSS was used to calculate Pearson correlations and one-tailed level of significance at both the 0.01 and 0.05 level. The decision to utilize one-tailed significance values was based on the fact that regression analysis is calculated using one-tailed significance.

Both level of dependence (AUDIT score) and number of alcohol related consequences (YAACQ score) are the primary dependent variables within this study. A correlational analysis of the variables found in the research questions below, determines the strength of an association between the dependent and independent variables.

RQ1: Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), number of alcohol related consequences (YAACQ), self-efficacy (DRSE), family history, and other drug use, predict level of dependence (AUDIT)?

RQ2: Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), level of dependence (AUDIT), self-efficacy (DRSE), family history, and other drug use, predict number of alcohol related consequences (YAACQ)?

RQ3: Does class level, age, self-efficacy (DRSE), impulsivity (SURP subscale), and college alcohol beliefs (CLASS) predict level of dependence (AUDIT)?

Based on the results of the correlational analysis, level of dependence (AUDIT) was strongly related to alcohol related consequences (YAACQ) with the highest correlation of all the variables ($r = .537, p < .001$). These results indicate that those with higher scores on level of

dependence had a higher number of alcohol related consequences. Additional moderate correlations with AUDIT scores included college alcohol beliefs ($r = .354, p < .000$) and marijuana use ($r = .331, p < .001$). Variables with a small correlation with AUDIT scores included: self-efficacy ($r = -.229, p < .001$); cigars, little cigars, clove cigarettes ($r = .197, p < .001$); tobacco from a water pipe (hookah) ($r = .196, p = .001$); smokeless tobacco use ($r = .165, p = .003$); and age ($r = .162, p = .003$); impulsivity ($r = .144, p = .008$); cigarette use ($r = .134, p < .013$); and depression ($r = .124, p = .019$).

Besides the strong correlation with AUDIT scores, YAACQ scores had small correlations with multiple variables in the study: college alcohol beliefs ($r = .288, p < .001$); depression ($r = .282, p < .001$); self-efficacy ($r = -.248, p < .001$); anxiety ($r = .239, p < .001$); anxiety sensitivity ($r = .187, p < .001$); impulsivity ($r = .186, p = .001$); marijuana use ($r = .182, p = .001$); tobacco from a water pipe (hookah) ($r = .153, p = .006$); and introversion-hopelessness ($r = .130, p = .016$).

Both AUDIT and YAACQ were negatively correlated with self-efficacy – the lower the self-efficacy scores, the higher the AUDIT and YAACQ scores. Self-efficacy had four additional small negative correlations: introversion-hopelessness ($r = -.268, p < .001$); marijuana use ($r = -.225, p < .001$); college alcohol beliefs ($r = -.202, p < .001$); depression ($r = -.183, p = .001$); tobacco from a water pipe (hookah) ($r = -.133, p = .013$); and cigarette use ($r = -.116, p = .027$).

Anxiety and depression were strongly correlated ($r = .654, p < .001$). Introversion-hopelessness was moderately correlated with depression ($r = .445, p < .001$), meaning that those with higher introversion-hopelessness scores have higher score on the PHQ-9 for depression. Class year and age both had small positive correlations with impulsivity.

Table 4.2
Zero-order bivariate correlation analysis

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17
AUDIT (X1)	1																
Alcohol Related Consequences (X2)	.000	1															
Anxiety (X3)	.532**	.130	1														
Depression (X4)	.068	.239**	.124*	1													
Introversion-Hopelessness (X5)	.452	.016	.130*	.393**	1												
Anxiety Sensitivity (X6)	.259	.001	.187**	.288**	.197**	1											
Impulsivity (X7)	.008	.001	.006	.001	.000	.417	1										
Self-Efficacy (X8)	.000	.000	.084	.001	.000	.374	.191	1									
Family History (X9)	-.229**	-.248**	-.083	-.183**	-.268**	-.019	-.053	1									
Cigarettes (X10)	.109	.064	.311	.337	.345	.339	.257	.325	1								
Tobacco from a water pipe (hookah) (X11)	.074	.092	-.030	.025	-.024	.025	-.039	-.027	.166	1							
Cigars, little cigars, clove cigarettes (X12)	.013	.114	.084	.349	.336	.054	.000	.027	.166	-.134*	1						
Smokeless tobacco (X13)	.001	.006	.286	.117	.301	.381	.013	.013	.405	.000	.196**	1					
Marijuana (pot, weed, hashish, hash oil) (X14)	.000	.077	.130	.233	.082	.211	.375	.239	.028	.038	.000	.197**	1				
Class Year (X15)	.003	.412	.355	.420	.256	.007	.013	.129	.091	.011	.110	.004	.365**	1			
Age (X16)	.165**	.013	-.022	-.012	.040	-.147**	.135*	-.068	.080	.137*	.074	.160**	1				
College Alcohol Beliefs (X17)	.000	.001	.459	.137	.115	.032	.006	.000	.200	.000	.000	.000	.004	.331**	1		
	.222	.343	.254	.093	.449	.225	.033	.368	.180	.146	.159	.056	.301	.335	.242**	1	
	.046	.024	.040	.080	.008	.046	.111*	.020	.055	.063	-.060	-.096	.031	.026	1		
	.003	.231	.198	.126	.084	.306	.015	.293	.069	.035	.412	.122	.223	.202	.000	1	
	.162**	.044	.051	.069	.083	.031	.130*	-.033	.089	.109*	-.013	-.070	.046	.050	.816**	1	
	.000	.000	.468	.048	.440	.210	.000	.000	.126	.013	.001	.002	.093	.000	.369	.409	1
	.354**	.288**	.005	.100*	-.009	-.049	.315**	-.202**	-.069	.133*	.179**	.168**	.080	.310**	.020	.014	.014

Note: 1-tailed significance is reported at the top row and the Pearson correlation is reported on the bottom row for each variable.

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Listwise N=277

Regression Analysis

Three multiple regression analyses were calculated to examine the three research questions presented in this study. The regression analyses began with fully saturated models and then they were reduced to incorporate the most critical variables. The first and third research questions were developed in order to understand the relation between multiple independent variables and level of alcohol dependence. The second research question reflected the first research question, in that multiple independent variables were examined in order to understand their relation with number of alcohol related consequences.

For each research question, I used the same procedures as follows:

1. Ran descriptive univariate analysis for each variable to check for linearity, correlations, skewness, and normality via boxplots, histograms, and Normal Q-Q plots.
2. Excluded cases listwise when analyzing the data in zero-order correlational analysis and regression analysis.
3. Ran a multiple linear regression with multiple independent variables and one dependent variable for each research question.
4. Provided zero-order bivariate correlations for each research question.
5. Examined ANOVA results for the regression model to determine significance at $p \leq .05$.
6. Checked for multicollinearity via tolerance (above 0.2) and VIF values (below 10).
7. Examined residuals using normal probability plot (P-P).
8. Developed a trimmed model for each research question.

Research Question 1

Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), number of

alcohol related consequences (YAACQ), self-efficacy (DRSE), family history, and other drug use, predict level of dependence (AUDIT)?

A summary of the correlations among the thirteen predictor variables and level of dependence (AUDIT) are summarized in Table 4.3. The two highest correlations between the predictor variables and level of dependence are alcohol related consequences (YAACQ) and marijuana use (other drug use). Level of dependence is strongly and positively correlated with alcohol related consequences ($r = .532, p < .001$), meaning that as AUDIT scores increased, number of alcohol related consequences increased. Level of dependence is moderately and positively correlated with marijuana use ($r = .331, p < .001$), meaning as AUDIT scores increased, the number of days marijuana was used increased. Additional significant correlations with AUDIT scores were found among depression, impulsivity, self-efficacy, cigarettes, tobacco from a water pipe (hookah), cigars, little cigars, clove cigarettes, and smokeless tobacco. No correlation was found between AUDIT scores and anxiety, introversion-hopelessness, anxiety sensitivity, and family history.

Table 4.3
Zero-order bivariate correlation analysis for RQ1

AUDIT (X1)	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
	1													
Alcohol Related Consequences (X2)	.000	1												
Anxiety (X3)	.532**	.000	1											
Depression (X4)	.130	.239**	.000	1										
Introversion-Hopelessness (X5)	.068	.019	.000	.000	1									
Anxiety Sensitivity (X6)	.124*	.282**	.654**	.000	.177	1								
Impulsivity (X7)	.452	.016	.000	.000	.056	.417	1							
Self-Efficacy (X8)	-.007	.130*	.393**	.445**	.255**	.013	.191	1						
Family History (X9)	.259	.001	.000	.000	-.268**	.019	-.053	.325	1					
Cigarettes (X10)	-.039	.187**	.288**	.197**	.056	.339	.257	-.039	-.027	1				
Tobacco from a water pipe (hookah) (X11)	.144**	.186**	.151**	.180**	.255**	.013	.191	.027	.166	.264**	1			
Cigars, little cigars, clove cigarettes (X12)	.000	.000	.084	.001	.000	.374	.374	-.116*	-.058	.333**	.000	1		
Smokeless tobacco (X13)	-.229**	-.248**	-.083	-.183**	-.268**	.019	-.053	.325	.166	.333**	.365**	.107*	1	
Marijuana (pot, weed, hashish, hash oil) (X14)	.109	.064	.311	.337	.345	.339	.257	.325	.405	.333**	.365**	.107*	.365**	1
	.074	.092	-.030	.025	-.024	.025	-.039	-.027	.166	.333**	.365**	.107*	.365**	.107*
	.134*	.073	-.083	.023	-.026	-.097	.264**	-.116*	-.058	.333**	.365**	.107*	.365**	.107*
	.001	.006	.286	.117	.301	.381	.013	.013	.405	.333**	.365**	.107*	.365**	.107*
	.000	.077	.130	.233	.082	.211	.375	.239	.028	.038	.000	.000	.000	.000
	.197**	.086	-.068	-.044	-.084	-.048	.019	-.043	-.115*	.107*	.365**	.107*	.365**	.107*
	.003	.412	.355	.420	.256	.007	.013	.129	.091	.011	.110	.110	.110	.004
	.165**	.013	-.022	-.012	.040	-.147**	.135*	-.068	.080	.137*	.074	.160**	.160**	.160**
	.000	.001	.459	.137	.115	.032	.006	.000	.200	.000	.000	.000	.000	.004
	.331**	.182**	-.006	.066	-.072	-.112*	.151**	-.225**	.051	.401**	.319**	.242**	.242**	.158**
														1

Note: 1-tailed significance is reported at the top row and the Pearson correlation is reported on the bottom row for each variable.

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Listwise N=277

A multiple linear regression was calculated to predict level of dependence based on depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety-sensitivity (SURP subscale), impulsivity (SURP subscale), number of alcohol related consequences (YAACQ), self-efficacy (DRSE-Q), family history, other drug use (cigarettes, tobacco from a water pipe/hookah, cigars/little cigars/clove cigarettes, smokeless tobacco, and marijuana). A significant regression equation was found $F(13, 263) = 12.333, p < .001$, with an R^2 of .379. The standardized beta coefficients revealed that three of the predictor variables had a positive effect on level of dependence (AUDIT score): YAACQ scores ($B = .342, p < .001$), smokeless tobacco use ($B = .380, p = .053$), and marijuana use ($B = .377, p = .003$).

After running the regression on the thirteen predictor variables, I trimmed the model until three variables remained significant at the $p \leq .01$ level. These variables included: YAACQ scores ($B = .343, p < .001$), smokeless tobacco use ($B = .471, p = .013$), and marijuana use ($B = .491, p < .001$). A significant regression equation was found $F(3, 273) = 49.931, p < .001$, with an R^2 of .354. These results indicated that compared to the original regression analysis, these variables contributed to 35.4% of the original 37.9% of variance in AUDIT scores. A summary of the results can be found in Table 4.4.

Table 4.4
Summary of RQ1 Regression Analysis

Variable	Original Model		Trimmed Model	
	B	p	B	p
Depression Score	.024	.808		
Anxiety Score	-.005	.956		
Introversion-Hopelessness Score	-.095	.151		
Anxiety-Sensitivity Score	-.130	.080		
Impulsivity Score	.060	.520		
Number of alcohol related consequences	.342	<.001	.343	<.001
Self-Efficacy Score	-.440	.160		
Family History	.029	.692		
Cigarettes	-.063	.625		
Tobacco from a water pipe/hookah	.076	.723		

Cigars/little cigars/clove cigarettes	.316	.140		
Smokeless tobacco	.380	.053	.471	.013
Marijuana	.377	.003	.491	<.001
Model Summary				
F	12.333		49.931	
df	13		3	
p	<.001		<.001	
R ²	.379		.354	

Research Question 2

Does a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), level of dependence (AUDIT), self-efficacy (DRSE), family history, and other drug use, predict number of alcohol related consequences (YAACQ)?

A summary of the correlations among the thirteen predictor variables and number of alcohol related consequences are summarized in Table 4.4. The strongest correlation between the predictor variables and number of alcohol related consequences (YAACQ) was level of dependence (AUDIT) ($r = .532, p < .001$), meaning that as number of alcohol related consequences increased, AUDIT scores increased. A small positive correlation was found between number of alcohol related consequences and both anxiety ($r = .239, p < .001$) and depression ($r = .282, p < .001$) scores. A small negative correlation was found between number of alcohol related consequences and self-efficacy ($r = -.248, p < .001$), meaning that as self-efficacy scores increased, number of alcohol related consequences decreased. Additional significant correlations with YAACQ scores were found among depression, anxiety, introversion-hopelessness, anxiety-sensitivity, impulsivity, tobacco from a water pipe (hookah), and marijuana. No correlation was found between YAACQ scores and family history, cigarettes, cigars, little cigars, and clove cigarettes, and smokeless tobacco.

Table 4.5
Zero-order bivariate correlation analysis for RQ2

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
Alcohol Related Consequences (X1)	1													
AUDIT (X2)	.000	1												
Anxiety (X3)	.000	.130	1											
Depression (X4)	.000	.019	.000	1										
Introversiion-Hopelessness (X5)	.016	.452	.000	.000	1									
Anxiety Sensitivity (X6)	.130*	-.007	.393**	.445**	.177	1								
Impulsivity (X7)	.001	.259	.000	.000	.056	.197**	1							
Self-Efficacy (X8)	.187**	-.039	.288**	.197**	.056	.197**	.191	1						
Family History (X9)	.000	.000	.084	.001	.000	.374	.191	.000	1					
Cigarettes (X10)	.186**	.144**	.151**	.180**	.255**	.013	.191	.000	.374	1				
Tobacco from a water pipe (hookah) (X11)	-.248**	-.229**	-.083	-.183**	-.268**	.019	-.053	.325	.027	.166	1			
Cigars, little cigars, clove cigarettes (X12)	.064	.109	.311	.337	.345	.339	.257	.325	.027	.166	.027	1		
Smokeless tobacco (X13)	.092	.074	-.030	.025	-.024	.025	-.039	-.027	.027	.166	.027	.166	1	
Marijuana (pot, weed, hashish, hash oil) (X14)	.073	.134*	-.083	.023	-.026	-.097	.264**	-.116*	-.058	.000	.000	.038	.038	1
	.006	.001	.286	.117	.301	.381	.013	.013	.405	.000	.000	.107*	.107*	.365**
	.153**	.196**	-.034	.072	-.032	-.018	.133*	-.133**	-.014	.333**	1			
	.077	.000	.130	.233	.082	.211	.375	.239	.028	.038	.038	1		
	.086	.197**	-.068	-.044	-.084	-.048	.019	-.043	-.115*	.107*	.107*	.365**	1	
	.412	.003	.355	.420	.256	.007	.013	.129	.091	.011	.110	.110	.004	1
	.013	.165**	-.022	-.012	.040	-.147**	.135*	-.068	.080	.137*	.074	.160**	.160**	.160**
	.001	.000	.459	.137	.115	.032	.006	.000	.200	.000	.000	.000	.000	.004
	.182**	.331**	-.006	.066	-.072	-.112*	.151**	-.225**	.051	.401**	.319**	.242**	.242**	.158**
														1

Note: 1-tailed significance is reported at the top row and the Pearson correlation is reported on the bottom row for each variable.

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Listwise N=277

A multiple linear regression was calculated to predict number of alcohol related consequences based on depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety-sensitivity (SURP subscale), impulsivity (SURP subscale), level of dependence (AUDIT), self-efficacy (DRSE-Q), family history, other drug use (cigarettes, tobacco from a water pipe/hookah, cigars/little cigars/clove cigarettes, smokeless tobacco, and marijuana). A significant regression equation was found $F(13, 263) = 12.684, p < .001$, with an R^2 of .385. The standardized beta coefficients revealed that three of the predictor variables had an effect on the number of alcohol related consequences (YAACQ): anxiety-sensitivity scores ($B = .310, p = .003$), AUDIT scores ($Beta = .691, p < .001$), and self-efficacy scores ($B = -.913, p = .040$).

After running the regression on the thirteen predictor variables, I trimmed the model until four variables remained significant at the $p \leq .05$ level. These variables included: PHQ-9 scores ($B = .216, p = .001$), anxiety-sensitivity ($Beta = .354, p < .001$), AUDIT scores ($B = .704, p < .001$), and self-efficacy scores ($B = -.895, p = .033$). A significant regression equation was found $F(4, 272) = 39.784, p < .001$, with an R^2 of .369. These results indicated that compared to the original regression analysis, these variables contributed to 36.9% of the original 38.5% of variance in YAACQ scores. A summary of the results can be found in Table 4.6.

Table 4.6
Summary of RQ2 Regression Analysis

Variable	Original Model		Trimmed Model	
	B	p	B	p
Depression Score	.216	.128	.347	.001
Anxiety Score	.135	.286		
Introversion-Hopelessness Score	.006	.952		
Anxiety-Sensitivity Score	.310	.003	.354	<.001
Impulsivity Score	.215	.102		
Level of Dependence Score	.691	<.001	.704	<.001
Self-Efficacy Score	-.913	.040	-.895	.033
Family History	.124	.239		

Cigarettes		-.021	.908
Tobacco from a water pipe/hookah		.199	.513
Cigars/little cigars/clove cigarettes		.047	.878
Smokeless tobacco		-.365	.191
Marijuana		-.026	.889
Model Summary			
	F	12.684	39.784
	df	13	4
	p	<.001	<.001
	R ²	.385	.369

Research Question 3

Does class level, age, self-efficacy (DRSE), impulsivity (SURP subscale), and college alcohol beliefs (CLASS) predict level of dependence (AUDIT)?

A summary of the correlations among the five predictor variables and level of dependence are summarized in Table 4.7. A moderately positive correlation was found between level of dependence and college alcohol beliefs (CLASS) ($r = .354, p < .001$), meaning that as AUDIT scores increased, age increased. A small negative correlation was found between level of dependence and self-efficacy ($r = -.229, p < .001$). A small positive correlation was found between level of dependence and both age ($r = .162, p = .003$) and impulsivity ($r = .144, p = .008$). No correlation was found between class year and level of dependence.

Table 4.7
Zero-order bivariate correlation analysis for RQ3

	X1	X2	X3	X4	X5	X6
AUDIT (X1)	1					
Impulsivity (X2)	.008	1				
Self-Efficacy (X3)	.144**	.191	1			
Class Year (X4)	-.229**	-.053	.020	1		
Age (X5)	.222	.033	.293	.000	1	
College Alcohol Beliefs (X6)	.046	.111*	-.033	.816**	.409	1
	.003	.130*	.000	.020	.014	
	.162**	.315**	-.202**	.369	.014	
	.354**	.315**	-.202**	.020	.014	1

Note: 1-tailed significance is reported at the top row and the Pearson correlation is reported on the bottom row for each variable.

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Listwise N=277

A multiple linear regression was calculated to predict number of alcohol related consequences based on class level, age, self-efficacy (DRSEQ), impulsivity (SURP subscale), and college alcohol beliefs (CLASS). A significant regression equation was found with all five variables $F(5, 271) = 13.113, p < .001$, with an R^2 of .195. The standardized beta coefficients revealed that four of the five predictor variables had a significant positive effect on level of dependence (AUDIT score): class year ($B = -2.022, p = .010$), age ($B = 1.281, p < .001$), self-efficacy scores ($B = -.855, p = .009$), and CLASS score ($B = .126, p < .001$). Impulsivity was not a good predictor at ($B = .031, p = .756$).

After running the regression on the five variables, I trimmed the model until four variables remained significant at the $p \leq .01$ level. These variables included: class year ($B = -2.022, p = .010$), age ($B = 1.289, p < .001$), self-efficacy scores ($B = -.854, p = .009$), and CLASS score ($B = .128, p < .001$). A significant regression equation was found $F(4, 272) = 16.421, p < .001$, with an R^2 of .195. These results indicated that compared to the original regression analysis, impulsivity did not contribute to the variance of AUDIT scores, but the remaining four variables contributed to the 19.5% of the variance in AUDIT scores. A summary of the results can be found in Table 4.8.

Table 4.8
Summary of RQ3 Regression Analysis

Variable	Original Model		Trimmed Model	
	B	p	B	p
Class Level	-2.022	.010	-2.022	.010
Age	1.281	<.001	1.289	<.001
Self-Efficacy Score	-.855	.009	-.854	.009
Impulsivity Score	.031	.756		
College Alcohol Beliefs Score	.126	<.001	.128	<.001
Model Summary				
	F	13.113	16.421	
	df	5	4	
	p	<.001	<.001	
	R^2	.195	.195	

Chapter 5: DISCUSSION

The purpose of this study was to develop a better understanding of the individual factors that impact college student drinking such as their mental health, personality traits, college drinking beliefs, and self-efficacy. Within this final chapter, I will summarize the findings of the three research questions posed, discuss the strengths and limitations of the study, provide an overview of the implications, and recommend future research directions.

Specific Findings for Research Question 1

For the first research question, a regression analysis was conducted in to understand whether a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), number of alcohol related consequences (YAACQ), self-efficacy (DRSE), family history, and other drug use predict level of dependence (AUDIT).

The thirteen independent variables accounted for 37.9% of the difference in AUDIT scores. Three variables, number of alcohol related consequences (YAACQ), smokeless tobacco (other drug), and marijuana (other drug) accounted for 35.4% of the 37.9% of the difference in AUDIT scores. This means that for every 1-unit increase in the YAACQ score, the AUDIT score increased by .343. Additionally, for every 1-unit increase in smokeless tobacco, the AUDIT score increased by .471. Lastly, for every 1-unit increase of marijuana, the AUDIT score increased by .491. These findings indicate that alcohol related consequences, use of smokeless tobacco and use of marijuana are associated with an increase in level of dependence.

This also means that ten variables did not significantly contribute to the original model, including: depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), family history, cigarettes,

tobacco from a water pipe/hookah, and cigars/little cigars/clove cigarettes. Of these variables, it was particularly interesting that impulsivity did not impact level of dependence, as higher levels of impulsivity are related to increased alcohol use and risk in multiple studies (LaBrie, Kenney, Napper, & Miller, 2014; Magid, MacLean, & Colder, 2007; Shin, Hong, & Jeon, 2012).

Alcohol Related Consequences

The results indicating alcohol related consequences as a predictor of increased level of dependence were expected. Past research (NIAAA, 2015; Weitzman & Nelson, 2004) found that both high risk and lower risk drinkers face alcohol related consequences. Consumption of alcohol leads to academic, social, physical/sexual/mental health, and legal consequences that negatively impact students (NIAAA, 2015; Weitzman & Nelson, 2004).

Other Drug Use

The results indicating other drug use as a predictor of increased level of dependence were consistent with previous research. Grant and Pickering (1999) reported that cannabis dependence is predicted by alcohol dependence. Additionally, research (Center for Behavioral Health Statistics and Quality, 2015; Lipari & Jean-Francois, 2016) on illicit drug use found approximately 20% of college students have engaged in illicit drug use in the past month, marijuana being one of the most widely used.

What was unexpected, however, were the results finding smokeless tobacco to be a predictor of level of dependence. There is little research on the connection between alcohol use and smokeless tobacco use, but there is evidence suggesting smokeless tobacco use is highest among 18 to 24 year olds, putting college students at risk for smokeless tobacco use (CDC, 2009; Meier, Lechner, Miller, & Wiener, 2013). Sanem, Berg, An, Kirch, & Lust (2009) reported that men are more likely to use smokeless tobacco within the last month. It could be postulated that

due to the number of males in this study sample (66.8% male), and knowing that males engage in higher levels of alcohol use (O'Malley & Johnston, 2002), smokeless tobacco predicted increased level of dependence.

Another possibility for the predictive value of smokeless tobacco and level of dependence could be the rising popularity in e-cigarettes and the link between nicotine use and increased rates of heavy drinking (Littlefield, Gottlieb, Cohen, & Trotter, 2015). When answering this question about smokeless tobacco - students may have considered smokeless tobacco to be an e-cigarette versus the traditional idea of smokeless tobacco being dip or chew that one sticks in the side of their mouth.

Specific Findings for Research Question 2

For the second research question, a regression analysis was conducted to understand if a student's depression (PHQ-9), anxiety (OASIS), introversion-hopelessness (SURP subscale), anxiety sensitivity (SURP subscale), impulsivity (SURP subscale), level of dependence (AUDIT), self-efficacy (DRSE), family history, and other drug use predict number of alcohol related consequences (YAACQ).

The thirteen independent variables accounted for 38.5% of the difference in number of alcohol related consequences. Four variables, depression (PHQ-9), anxiety-sensitivity (SURP subscale), level of dependence (AUDIT), and self-efficacy (DRESQ) accounted for 36.9% of the 38.5% of the difference in AUDIT scores. This means that for every 1-unit increase in the depression score, the YAACQ score increased by .347. For every 1-unit increase in the anxiety-sensitivity score, the YAACQ score increased by .354. Additionally, for every 1-unit increase in AUDIT scores, the YAACQ score increased by .704. Lastly, for every 1-unit increase in the self-efficacy score, the YAACQ score decreased by .895. These findings indicate that mental

health and level of dependence are associated with an increase in alcohol related consequences, whereas, self-efficacy is associated with a decrease in alcohol related consequences.

This also means that nine variables did not significantly contribute to the original model, including: anxiety (OASIS), introversion-hopelessness (SURP subscale), impulsivity (SURP subscale), family history, cigarettes, tobacco from a water pipe/hookah, cigars/little cigars/clove cigarettes, smokeless tobacco, and marijuana. Similar to the first research question, it was unexpected to find impulsivity did not impact level of dependence, given that much of the research on student alcohol use and impulsivity find a relationship between the two (LaBrie, Kenney, Napper, & Miller, 2014; Magid, MacLean, & Colder, 2007; Shin, Hong, & Jeon, 2012).

Depression and Anxiety Sensitivity

Depression and anxiety are the two most prevalent mental health issues diagnosed in college students (Blanco et al., 2008; Eisenberg, Hunt, & Speer, 2013). College students with poor mental health are more likely to engage in drinking, drink to get drunk, and report higher levels of harm from alcohol when compared to their peers (Weitzman, 2014). Whelan and colleagues (2014) also found among adolescents that anxiety sensitivity predicts future binge drinking, and binge drinking leads to increased risk of alcohol related consequences (NIAAA, 2015). It was not surprising, therefore, that this study found a relation between depression, anxiety sensitivity, and alcohol related consequences.

Level of Dependence

These results match the literature, specifically around the AUDIT, with Babor (2001) indicating that a pattern of hazardous drinking increases the risk of harmful consequences. Both men and women experience alcohol related consequences due to alcohol use, however, at higher levels of drinking, women are more likely to experience significantly more alcohol related

consequences when compared to men (Clarke, Kim, White, Jiao, & Mun, 2013). Though these results are not surprising, given the sample included more male participants, it would be interesting to conduct further analysis regarding the difference between males and females and the connection between level of dependence and alcohol related consequences.

Self-Efficacy

Research (Ehret, Ghaudarov, & LaBrie, 2013; Oei, Hasking, & Phillips, 2007; Oei & Jardim, 2007; Oh & Kim, 2014) suggests that there is a relationship between drinking refusal self-efficacy and drinking alcohol, with lower DRSE associated with increased alcohol use and problem behaviors linked to alcohol use. This finding also links to the theoretical framework of this study – self-efficacy influences the choices one makes, this is often developed via four sources: mastery experience, vicarious experience, verbal persuasion, and physiological states; within this study, increased self-efficacy predicts decreased alcohol related consequences, and aligns with these ideas that with better choices influenced by self-efficacy, the less consequences one endures (Bandura, 1997). With decreased consequences, students have likely mastered high risk drinking experiences, developed competence, and are developing integrity that leads to the belief that they can successfully refuse to engage in behaviors that put them at risk.

Specific Findings for Research Question 3

For the third research question, a regression analysis was conducted to understand if class level, age, self-efficacy (DRSE), impulsivity (SURP subscale), and college alcohol beliefs (CLASS) predict level of dependence (AUDIT).

The five independent variables accounted for 19.5% of the difference in AUDIT scores. Four variables, class level, age, self-efficacy (DRSEQ), and college alcohol beliefs (CLASS) accounted for 19.5% of the 19.5% difference in AUDIT values, with impulsivity not contributing

to this difference. This means that for every 1-unit increase class level, the AUDIT score decreased by 2.022. For every 1-unit increase in age, the AUDIT score increased by 1.289. Additionally, for every 1-unit increase in the self-efficacy score, the AUDIT score decreased by .854. Lastly, for every 1-unit increase in CLASS score, the AUDIT score increased by .128. These findings indicate that class level and self-efficacy are associated with a decrease in level of dependence, whereas, increase in age and college alcohol beliefs, are associated with an increase in level of dependence.

Age and Class Level

Research regarding class level has mixed findings, with some studies finding positive associations and others, relatively little or no associations between quantity and frequency of drinking and college year (Wechsler, Dowdall, Davenport & Castillo, 1995). Findings around age are broad, with college students having greater levels of binge drinking up to age 21 compared to non-college peers, but from 21-25, college students decrease their binge drinking at a quicker rate than do their non-college peers (White & Rabiner, 2012). I coded age in this study as 0 = 18, 1 = 19, 2 = 20, 3 = 21+, and the results indicated the opposite of what was expected – with an increase in age predicting an increase in level of dependence. This contrasts with the idea that as students get older and approach adulthood, their use of alcohol declines. However, this could also be accounted for when thinking about the participants in the study – most of the participants were 18 years old and they were mandated to attend BASICS, meaning they violated a policy or law around alcohol.

Given that very few of the participants were of the legal drinking age of 21 years or older, it could be argued that for these 21+ students to be mandated to BASICS means that they may have received a more severe citation like a DUI, public drunkenness, and/or disorderly conduct.

In the northeastern state this study took place, public drunkenness is a summary offense, and it cannot be expunged until 5 years of arrest free behavior occurs. Disorderly conduct can be charged as either a summary offense or a misdemeanor. A DUI can be charged as either a misdemeanor or a felony if serious injury or death was involved. When reflecting on Chickering's developmental theory, these 21+ year old students may have progressed through the developmental stages at a slower rate due to various external and internal factors, and could be stuck within the first four vectors. Another possible explanation is connected with Bandura's theory of self-efficacy – some of these students did not drink until turning 21 and have not established mastery of how to drink safely, by knowing their limits, utilizing safe strategies, and preventing over-consumption that could lead to endangering themselves, others, and ultimately, legal issues. Counter to these points are the findings for class level, as described below.

Class level was coded as 0 = “underclassmen” to 1 = “upperclassmen”, with underclassmen including freshman and sophomore students and upperclassmen included juniors, seniors, and graduate students. The results in this study were as expected, increase in class level, predicted a decrease in level of dependence. These results make sense when reflecting on the Chickering's developmental theory; as students enter college, they face various internal and external factors that influence their alcohol use (Aurora & Klaneckey, 2016; Cooper, 1994). In the beginning, they are influenced by their peers and the temptations within the new environment (Kuntsche, Knibbe, Gmel, & Engels, 2005). As they grow and mature, they work through the various stages of development moving towards decreased identity confusion, and increased identity consolidation (Chickering & Reisser, 1993). With increased maturity, comes decreased alcohol abuse, alcohol served a purpose in the beginning and over the years those reasons tapered off as students moved into adult roles (Bishop et al., 1997; Schulenberg & Maggs, 2002).

Self-Efficacy

Similar to the class level findings above, a less mature profile is linked with alcohol use and abuse. As discussed in the findings with alcohol related consequences, self-efficacy is the belief about one's ability to successfully cope with a situation, in this case, resist alcohol. Decreased DRSE is linked with increased alcohol use (Ehret, Ghaudarov, & LaBrie, 2013; Oei, Hasking, & Phillips, 2007; Oei & Jardim, 2007; Oh & Kim, 2014). This finding is at the intersect of both Chickering's student development theory and Bandura's theory of self-efficacy – as students enter college, they may be more at risk for increase substance use due to identity confusion, therefore, engaging in social conformity and attempting to avoid peer rejection (Arnett, 2005). After encountering consequences of alcohol use earlier on, they may have mastered experiences and overcome obstacles, with the ability to rebound from failures (Bandura, 1997; Demb & Campbell, 2009). Identity development and belief in one's capabilities to be successful may have implications for how college students utilize alcohol.

College Alcohol Beliefs

Similar to the findings in this study, greater scores on the CLASS resulted in increased level of dependence scores, Osberg and colleagues (2010) described that students entering college holding beliefs that drinking is an integral part of the college experience are at greater risk for abusing alcohol and selecting environments that promote risky drinking. These results also reflect both Chickering's student development theory and Bandura's theory of self-efficacy – initial beliefs about drinking may be false perceptions and expectancies rather than the reality. By engaging in various interactions and experiences and then developing one's own sense of self-efficacy and identity, students gain a clear picture and understanding of the role of alcohol and its social implications. They may be better able to differentiate the pros and cons of alcohol

use, and determine whether they are comfortable with their level of alcohol use or wish to adapt and make changes as they mature and master these experiences.

Strengths and Limitations

Strengths

The strengths of this study include the large sample size, the data, the measures, and my own experience with the implementation of BASICS. The sample size of this study $N = 277$. The larger samples sizes simply provided more data; and with more data, the more precise the mean values and the smaller the margin of error. Coinciding with the large sample size, is another strength, which was the data itself. The data collected provided multiple variables and various ways one could look at the data. Additionally, there was only one participant that had to be eliminated due to missing data, which is not common in a large data set. The measures were another strength in that they are utilized by numerous alcohol related studies, they are reliable and valid, and they were able to capture many of the critical factors influencing college student alcohol use.

Lastly, being a health educator for the BASICS program for almost two years has provided me with an enhanced understanding of what the numbers in the data are representing. When entering this research study, I thought about the hundreds of students I have met with and reflected on the factors that I thought might be most applicable for this study. Therefore, it allowed me to reduce the number of variables I wanted to study. Meeting with the students is a totally different experience than reading their scores from an assessment instrument. I believe that my work has provided me with the context around what seem to be major influences on alcohol use and gave me a sense of how the data aligns or does not align with what I have seen in practice. These insights also propelled me to be more realistic about what was missing from this

study, leading me to contemplate how future research studies, proposed later in this chapter, could further expand our knowledge and understanding of college alcohol use and more accurately target the factors influencing their use.

Limitations

The limitations of this study include the use of archival data, utilizing only self-report questionnaires, and participant recruitment. The data used in this study are seven years old and come from a larger study, which means the data did not include variables related to more recent factors like social media and reflect the new policies being implemented across universities nationwide as a response to alcohol-related deaths. The data also had large numbers of freshman with the breakdown being 52.0% freshman, 22.0% sophomores, 17.3% juniors, and 8.6% seniors, this could have impacted the results around class level. By using archival data, it did not provide the opportunity to include additional questions or integrate qualitative questions to connect the data with student narratives, and it was also hard to assess whether the instrument could have contributed to respondent fatigue, meaning the quality of data collected later in the assessment may have deteriorated. The data were all self-report, which can cause validity issues. An example of an issue with self-report was found in this study when reviewing the descriptive data; it was found that over forty participants reported not having experienced any alcohol related consequences, though at least one would need to be considered when being mandated to attend BASICS in the first place. Lastly, the data were collected from student who were mandated to attend the BASICS intervention. This could impact how they answer questions for fear of punishment or uncertainty about the confidentiality policy, as well as, make the initial rapport building difficult for the counselor, resulting in unsatisfactory connection with the client or lack of time to cover all aspects of the program. This could also impact the results, as

research (Caldwell, 2002; Larimer & Crouce, 2002) indicates that adjudicated students tend to be heavier drinkers and at increased risk for alcohol-related consequences. Though there were limitations to this study, there were also many strengths, and the next section will discuss the strengths and implications of this study.

Implications

Having gained further insight into the various developmental and individual factors influencing college student drinking, it is important to understand and apply the findings of this study to various sectors – counselors, health educators, student affairs, and counselor educators.

All three research questions resulted in trimmed models, meaning that certain independent variables did not contribute to the overall predictive relationship with either level of dependence or alcohol related consequences. It is, however, important to highlight that many of these independent variables not found to be predictive, did have a relationship with the dependent variables when reviewing the correlational analyses. Therefore, another way to understand and interpret the data would include looking at the correlations along with the regression models. For example, all three trimmed models did not find a predictive relationship between impulsivity and level of dependence and related consequences, yet the correlational analyses did find significant relations among these variables. Multiple independent variables were not significant in the regression analyses, but were found to be significantly related to the dependent variables in the correlational analyses. Therefore, the regression models may indicate that specific variables together are significantly predictive of level of dependence and related consequences, but that does not mean that there is no relationship between many of the other independent variables as indicated by the correlational analyses. Knowing this leads to a discussion of the clinical implications of this study and how certain data may not be significant

according to the specific research questions, however, when analyzed using a clinical perspective, the findings in this study are relevant for clinical application.

When reflecting on the correlational analyses for each research question, we find multiple significant relationships. Significant correlations with AUDIT scores were found among depression, impulsivity, self-efficacy, cigarettes, tobacco from a water pipe (hookah), cigars, little cigars, clove cigarettes, and smokeless tobacco. No correlation was found between AUDIT scores and anxiety, introversion-hopelessness, anxiety sensitivity, and family history. For research question two, significant correlations with YAACQ scores were found among depression, anxiety, introversion-hopelessness, anxiety-sensitivity, impulsivity, tobacco from a water pipe (hookah), and marijuana. No correlation was found between YAACQ scores and family history, cigarettes, cigars, little cigars, and clove cigarettes, and smokeless tobacco. The correlational analysis for research question three resulted in a positive correlation between level of dependence and college alcohol beliefs, age, and impulsivity; a negative correlation was found between level of dependence and self-efficacy; and no correlation was found between class year and level of dependence. It is critical for counselors and health educators to be knowledgeable and to be able to integrate these findings, along with the regression analyses results and Chickering's developmental model and Bandura's self-efficacy model, into their work with students when discussing drinking patterns. Professionals can do this by asking students about what they perceive others are drinking, their beliefs about alcohol, how their perceptions and beliefs impacts their drinking, screening for mental health concerns, having larger discussions about additional substances being used, and ultimately understanding how alcohol fits into students' lives. By understanding the role alcohol plays in students' lives, professionals will be able to tailor prevention and intervention programs to the individual student, based on the

individual factors influencing their alcohol use and where the student is at developmentally. Determining these influences and level of development can also impact the way the professional implements motivational interviewing.

It is also imperative that counselors and health educators understand motivational interviewing and how it applies to campus intervention and prevention programs in order to facilitate efficacious programs that elicit healthy behavior change. Counselors are well equipped with the skills and techniques like active listening, reflections, summaries, probes, and being present with the student in order to build rapport and set the tone for the spirit of MI. Not all health educators have a counseling background, and so they may need to go to workshops and trainings to learn the initial microskills critical for establishing rapport and working with students in a caring, non-judgmental, and collaborative way. Both counselors and health educators should have opportunities to attend workshops, trainings, and conferences related to substance use, motivational interviewing, and intervention/prevention programs available for college students.

Once this foundation is laid, it is critical for counselors and health educators to understand college student development and the idea of self-efficacy. MI is based on establishing the sense that one has the ability to make positive changes that will reduce risks and harm – in other words, facilitating self-efficacy. Understanding where a student is at developmentally in terms of identity formation and level of self-efficacy, rather than age, could also benefit the provider greatly because a student may feel more understood and provide students with a safe space to share their experiences with alcohol. Counselors and health educators should also be trained to work with students with mental health issues and understand the variables connected with level of dependence and alcohol related consequences. The correlations provided for each research question highlight clinically significant variables

connected to level of alcohol use or alcohol related consequences, including: anxiety, depression, introversion-hopelessness, anxiety-sensitivity, impulsivity, self-efficacy, other substance use (tobacco products and marijuana), age, and college alcohol beliefs. As introduced earlier in this section, knowing that these variables correlate with alcohol use and related consequences, afford the counselor or health educator to better conceptualize what is going on with the student, which may impact the probes and questions they might use in session in order to facilitate meaningful conversations and insights with the student.

In order for counselors and health educators to be able to provide this kind of care and support, and implement intervention programs efficaciously, student affairs and counselor education programs need to provide the opportunities for their employees and graduate students to learn. As noted earlier, this could include providing access and funds to attend trainings, workshops, and delivering this education directly. Within many counselor education programs, taking a course on addictions counseling is not required, however, this should be reconsidered given that many counselor education students meet with college students as part of their practicum training, and will likely work with future clients struggling with an addiction, have a family history of addiction, or are affected by addiction. Additionally, focusing on college student development in student affairs, but also in counselor education lifespan development courses would be important. College students live in their own culture, separate from non-college seeking students, therefore, only looking at general theories around emerging adulthood, psychosocial theories, and psychoanalytic theories, misses the specific challenges college students face, and by missing this, counselors might miss an opportunity to facilitate change.

There are many different ways that the results of the study impact how we understand student alcohol use, but also understand them as a whole, in order to better serve them and

facilitate change in their overall wellness and the college culture they are embedded in. These ideas reflect back to the quote in Chapter 2:

“By understanding how alcohol and other drug use fits in young people’s lives, and specifically how it is embedded in their numerous developmental transitions, we can have a stronger foundation for understanding etiology and for effecting positive change” (Schulenberg & Maggs, 2002, p. 66).

This study ultimately adds to the framework of understanding college student alcohol use and related consequences through a developmental lens. As students make their journey through the various vectors outlined by Chickering and develop a cohesive identity facilitated by the enhancement of self-efficacy through mastery, experience, social persuasion, and managing physiological responses, as proposed by Bandura, students become better equipped in navigating situations where alcohol is present, resulting in decreased level of dependence and alcohol related consequences.

This framework and the results of the study also provide a foundation for understanding the etiology of college student alcohol use. The regression data suggested significant results regarding the relation between self-efficacy, beliefs about alcohol, mental health concerns, age, and other drug use and level of dependence and alcohol related consequences. Clinically significant results were also found in the correlational analysis, which suggested that alcohol related consequences, depression, self-efficacy, impulsivity and other substance use were related to level of dependence in college students. Additionally, the correlational analysis for alcohol related consequences suggested a relationship with level of dependence, anxiety, depression, introversion-hopelessness, anxiety sensitivity, impulsivity, self-efficacy, and other substance use. These correlational analyses coupled with the regression models are clinically relevant for those

implementing programs in order to bring about positive change in college student alcohol use. The next section will provide suggestions on how these results and additional factors could be studied in the future in order to better understand and support college students.

Future Research

Reviewing the results of this study and previous studies opens up future research opportunities. First, an overarching need is for future work to consider expanding analyses to more years of student data and looking at trends across time. Second, the results of the study are confined to a general population and are not broken down into various categories like sex, sexuality, race, ethnicity, or status as an athlete or member of the Greek community. Looking at specific sectors of college students could provide more insights into what influences student drinking and does being part of any of these categories impact how and why alcohol is consumed.

For instance, Tupler and colleagues (2017), studied blackouts, alcohol related consequences, and motivations for drinking among first year transgender students. Tupler and colleagues (2017) found that compared to their cisgender peers, transgender students engaged in higher-risk drinking patterns, experienced more blackouts and academic, confrontation-related, social, and sexual alcohol related consequences. Students whom identified as transgender also reported stress reduction, social anxiety, and self-esteem issues as motivations for drinking (Tupler et al., 2017). Developing an understanding of various populations and the different motivations for drinking and the consequences involved, can help counselors and health educators meet students where they are at developmentally, socially, and mentally, rather than using a universal approach. When meeting with a transgender student, a discussion around BACs could vary – professionals need to consider if the student is on hormone therapy and/or if

they are biologically male, then they may process alcohol differently due to their increased levels of gastric alcohol dehydrogenase and liver size (Cornell University, 2017).

The main components of programs like BASICS are still applicable, but having awareness, seeking out additional knowledge and information, and then developing skills around how to address and work with students with various identities is crucial to building rapport, fostering inclusivity, and gaining a deeper understanding of the factors influencing their alcohol use. Thus, continued research of various student groups must be conducted in order to facilitate the awareness, knowledge, and skills of those implementing alcohol and substance use interventions on college campuses. With this research, counselors, health educators, and student affairs staff and administration must be open to continued learning and adaptation of how they discuss development, identity development, and self-efficacy as it relates to multiple student groups.

Third, future studies could take a deeper look at the implementation of MI via observation of BASICS sessions, and specifically look at the role of self-efficacy. For example, future research could look at how self-efficacy is discussed, how professionals are eliciting change talk and its relationship with self-efficacy, or running a pre- and post-test comparison of self-efficacy before and after attending BASICS. The current study found that drinking refusal self-efficacy predicted decreased scores in level of dependence and alcohol related consequences, and these findings are similar to those found by other studies (Ehret et al., 2013; Foster, Dukes, & Sartor, 2016; Foster, Yeung, & Neighbors, 2014). However, little research is being done to understand the role of the counselor or health educator in facilitating self-efficacy via motivational interviewing or the relation between self-efficacy and alcohol use versus drinking refusal self-efficacy and alcohol use among college students. The current research

(Ehret, LaBrie, Santerre, & Sherman, 2015; Ehret & Sherman, 2018) focuses on motivational interviewing and the integration of self-affirmation. Self-affirmation typically increases intentions to decrease drinking and is related to other predictors of intentions, like self-efficacy. It could, therefore, be important to take into account predictors of intentions to change and belief that one can make intended changes, self-efficacy, when conducting further research to better understand the role of self-efficacy and the foundations needed in order to successfully navigate future drinking opportunities. Researchers of these studies could not only do pre- and post-test analysis of whether MI increased self-efficacy, but they could also conduct interviews regarding students' conceptualization of their individual self-efficacy versus their behaviors. The possible discrepancy could possibly lead to further understanding of whether the students' self-efficacy matches their behaviors. In other words, if faced with a high risk drinking situation, they may believe they can successfully navigate the situation, but if they do not, it would be interesting data to collect on the factors that outweighed their intentions and resulted in riskier behaviors.

Connected to self-efficacy, an additional underlying factor that would be interesting to study further includes looking at adverse childhood events and college student alcohol use. Windle and colleagues (2018) found that more adverse childhood experiences (ACEs) are associated with higher levels of mental health issues, cigarette use, alcohol use, BMI, and poorer nutrition, and they suggest that college should implement intervention programs across more than one health behavior. Read, Radomski, and Borsari (2015), discuss a possible way to address trauma via a modified version of brief motivational interviewing, based on social learning theory and conservation of resources theory. The modified intervention would focus on both cognitive (self-efficacy, expectancies) and behavioral (coping, emotion regulation, protective behaviors) elements they believe are critical in addressing when working with students

with trauma and alcohol misuse (Read et al., 2015). Similar to the current study findings linking self-efficacy and lower levels of dependence and alcohol related consequences, Read and colleagues (2015), discussed the connection between self-efficacy, alcohol misuse, and trauma. They suggested that facilitating increased self-efficacy could enhance a sense of mastery and control, elements that may have been diminished by trauma (Read et al., 2015). Future studies could be done by looking at adverse childhood experiences (ACEs), the relation with alcohol misuse and the impact a modified brief motivational intervention program has on both the cognitive and behavioral elements linked to trauma and alcohol misuse. Data from these future studies could enhance the ideas put forth by Read and colleagues (2015), and contribute to the creation of an efficacious program that could better serve students with trauma histories and substance use issues.

Ultimately, counselors and health educators would have to be trained in providing trauma-informed care. Mills (2015), expands on this idea stating that traumatic events can shape an individual's view of themselves, the world around them, and how they relate to it. She posits that knowledge and awareness of a client's trauma history is critical to understanding the cause and nature of the presenting problems or challenges to wellness (Mills, 2015). Mills (2015), also notes that self-medication for PTSD symptoms plays a crucial role in the development and maintenance of substance use disorders. Killeen, Back, and Brady (2015), describe trauma-informed care as first recognizing the high rates of exposure to trauma in the population being served, and then providing a safe environment with services that meet the needs of patients with a history of trauma in order to promote a healing treatment environment rather than a re-traumatizing environment. In order to take a trauma-informed approach to treating substance use, counselor education programs and employers would have to provide trauma-informed

trainings to better equip counselors and health educators with the awareness, knowledge, and skills they need to make them more effective providers.

Another area to focus on could be adapting BASICS to increase emphasis on the role of alcohol related consequences - this is done during the pros and cons of drinking and in the feedback report, but how is it discussed? How can it be more effectively discussed? For instance, knowing that the AUDIT scores and number of alcohol related consequences were highly correlated and predictive for one another, it would be odd if a student reported multiple consequences and lower AUDIT scores – leading the counselor or educator to hone in on this and utilize probes to understand where the disconnect is? Is the student drinking a lot, but less often – resulting in lower AUDIT scores, yet more consequences when they do drink? Are there specific consequences that are most relevant/related to AUDIT scores? This last question could be explored by going through each YAACQ question and analyzing its relationship with AUDIT scores, as well as other factors presented in this study.

Additionally, an interesting line of research that would be useful for student affairs administrators, is to look at the economics of the financial impact student alcohol use is having on the school budget. When describing the secondary effects of heavy drinking on campus, Kapner (2008), focused on alcohol infused campus riots related to sporting events and the associated economic burdens, but did not go much further than that. It could be argued that this data is being collected by student affairs departments at different universities, but not publicly shared. However, if it is not being collected, knowing that heavy alcohol use leads to increased alcohol related consequences, including physical and emotional harm and lower GPAs, administrators might want to consider dropout rates related to alcohol use. Additionally, they may want to look into the amount they are spending on maintenance of campus grounds and

affiliated staff. The economic costs may speak to donors, alumnae, and board members in order to promote more funding towards alcohol prevention and intervention programs on campus.

Lastly, I believe an area that is constantly evolving, but continuing to have an impact on students is social media. Social media outlets provide platforms for students to observe and constantly compare themselves to others. Westgate and Holliday (2016) reviewed the literature regarding the role of social media in alcohol use and outlined three potential roles of social media: 1) Social influence (drinking norms, attitudes, advertising/marketing); 2) Behavior (alcohol consumption, alcohol-related problems, alcohol cravings, clinical alcohol use disorders); 3) Identity (accurate self-portrayal, social network membership, group identity and culture). The authors discussed how posting alcohol-related content was linked to higher rates of consumption, alcohol-related problems, cravings, and could identify potential risk for alcoholism (Westgate & Holliday, 2016). Boyle, Earle, LaBrie, and Ballou (2017), found that Instagram was the platform most likely to have posts glamorizing college drinking, Snapchat was the platform where most posts showed the negative consequences of drinking, and Facebook was the least likely place for either type of post to be found. They suggest researchers focus on Instagram and Snapchat when studying the influences of social media on alcohol use. Boyle, LaBrie, Froidevaux, and Witkovic (2016), studied the influence of exposure to peer alcohol-related social media on drinking among first year students; they found that exposure to alcohol-related posts predicted students' drinking six months later, finding a stronger relationship among males. Additional research in this area could focus on the relation between social media, mental health concerns, and risky behaviors like drinking or other substance use. Other studies could focus on the impact of social media images and messages and identity development – identity development could be stalled by impeding the development of self-efficacy and perpetuating inaccurate

alcohol beliefs. For instance, if students are constantly seeing others going to huge parties and believing that they are drinking heavily, they may feel like they need to join in, continuing to stay dependent on peers and lacking confidence in their ability to do something beyond drinking in order to have fun and socialize.

Social media could also be used in a positive manner, such as implementing intervention apps that help students track and identify their drinks, promoting safer drinking strategies, and decreasing alcohol related consequences (Westgate & Holliday, 2016). Ridout and Campbell (2014) performed one of the few studies on assigning a brief intervention via Facebook to students identified as heavy drinkers and found that the intervention significantly reduced alcohol consumption. Moreno and Whitehill (2014) also suggested, more generally, how advertising on social media sites could promote healthy behaviors, safe transportation, and other services to reduce harms associated with alcohol consumption. Ultimately, social media can be utilized positively and negatively to influence alcohol use among students, and moving forward researchers and universities need to think creatively on how to counter the negative influences by developing interventions and marketing strategies that aim to promote healthy behaviors.

In conclusion, Chickering's student development theory, Bandura's self-efficacy theory, and the results from this study, especially the last research question, challenge the idea of maturity along an age continuum, and propose that maturity is a function of self-efficacy and identity development, rather than age. With the understanding of the importance of mental health, college alcohol beliefs, substance use, and additional factors such as past trauma and various student identities and how they interact with alcohol related consequences and level of dependence, college campuses can improve the effectiveness of their programs and enhance the support of their students. Enhanced effectiveness will provide individual students with a better

understanding of what factors influence their drinking and will better equip them with strategies and skills to initiate and maintain safer drinking strategies.

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APPENDIX A

Anxiety Measure

Overall Anxiety Severity and Impairment Scale (OASIS; Norman, Cissell, Means-Christensen, & Stein, 2006)

Overall Anxiety Severity and Impairment Scale (OASIS)

The following items ask about anxiety and fear. For each item, circle the number for the answer that best describes your experience over the past week.

1. In the past week, how often have you felt anxious?

- 0 = *No* anxiety in the past week.
- 1 = *Infrequent* anxiety. Felt anxious a few times.
- 2 = *Occasional* anxiety. Felt anxious as much of the time as not. It was hard to relax.
- 3 = *Frequent* anxiety. Felt anxious most of the time. It was very difficult to relax.
- 4 = *Constant* anxiety. Felt anxious all of the time and never really relaxed.

2. In the past week, when you have felt anxious, how intense or severe was your anxiety?

- 0 = *Little or None*: Anxiety was absent or barely noticeable.
- 1 = *Mild*: Anxiety was at a low level. It was possible to relax when I tried. Physical symptoms were only slightly uncomfortable.
- 2 = *Moderate*: Anxiety was distressing at times. It was hard to relax or concentrate, but I could do it if I tried. Physical symptoms were uncomfortable.
- 3 = *Severe*: Anxiety was intense much of the time. It was very difficult to relax or focus on anything else. Physical symptoms were extremely uncomfortable.
- 4 = *Extreme*: Anxiety was overwhelming. It was impossible to relax at all. Physical symptoms were unbearable.

3. In the past week, how often did you avoid situations, places, objects, or activities because of anxiety or fear?

- 0 = *None*: I do not avoid places, situations, activities, or things because of fear.
- 1 = *Infrequent*: I avoid something once in a while, but will usually face the situation or confront the object. My lifestyle is not affected.
- 2 = *Occasional*: I have some fear of certain situations, places, or objects, but it is still manageable. My lifestyle has only changed in minor ways. I always or almost always avoid the things I fear when I'm alone, but can handle them if someone comes with me.
- 3 = *Frequent*: I have considerable fear and really try to avoid the things that frighten me. I have made significant changes in my life style to avoid the object, situation, activity, or place.
- 4 = *All the Time*: Avoiding objects, situations, activities, or places has taken over my life. My lifestyle has been extensively affected and I no longer do things that I used to enjoy.

4. In the past week, how much did your anxiety interfere with your ability to do the things you needed to do at work, at school, or at home?

- 0 = *None*: No interference at work/home/school from anxiety
- 1 = *Mild*: My anxiety has caused some interference at work/home/school. Things are more difficult, but everything that needs to be done is still getting done.
- 2 = *Moderate*: My anxiety definitely interferes with tasks. Most things are still getting done, but few things are being done as well as in the past.
- 3 = *Severe*: My anxiety has really changed my ability to get things done. Some tasks are still being done, but many things are not. My performance has definitely suffered.
- 4 = *Extreme*: My anxiety has become incapacitating. I am unable to complete tasks and have had to leave school, have quit or been fired from my job, or have been unable to complete tasks at home and have faced consequences like bill collectors, eviction, etc.

5. In the past week, how much has anxiety interfered with your social life and relationships?

- 0 = *None*: My anxiety doesn't affect my relationships.
- 1 = *Mild*: My anxiety slightly interferes with my relationships. Some of my friendships and other relationships have suffered, but, overall, my social life is still fulfilling
- 2 = *Moderate*: I have experienced some interference with my social life, but I still have a few close relationships. I don't spend as much time with others as in the past, but I still socialize sometimes.
- 3 = *Severe*: My friendships and other relationships have suffered a lot because of anxiety. I do not enjoy social activities. I socialize very little.
- 4 = *Extreme*: My anxiety has completely disrupted my social activities. All of my relationships have suffered or ended. My family life is extremely strained.

Total Score: _____

APPENDIX B

Level of Dependence Measure

Alcohol Use Disorders Identification Test (AUDIT; Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R., & Grant, M. (1993)

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

APPENDIX C

Self-Efficacy Measure

Drinking Refusal Self-Efficacy Questionnaire – Revised Adolescent Version (DRSEQ-RA; Young, Hasking, Oei, & Loveday, 2006)

Drinking Refusal Self-Efficacy Questionnaire - Revised Adolescent Version (DRSEQ-RA)

The following items ask you to describe your ability to handle drinking situations. Your answers will be kept confidential so please try to answer as honestly as you can.

The following section contains a list of situations in which people may find themselves drinking alcohol. Most people find it easier to resist drinking in some of these situations than others. Please select the response which best describes how much you could resist drinking in each case.

- 1 – I am very sure I could NOT resist drinking
- 2 – I mostly likely could NOT resist drinking
- 3 – I probably could NOT resist drinking
- 4 – I probably could resist drinking
- 5 – I most likely could resist drinking
- 6 – I am very sure I could resist drinking

1. When I am watching TV	1	2	3	4	5	6
2. When I am angry	1	2	3	4	5	6
3. When I am having lunch	1	2	3	4	5	6
4. When I am at a party	1	2	3	4	5	6
5. When I am on the way home from school	1	2	3	4	5	6
6. When someone offers me a drink	1	2	3	4	5	6
7. When I feel frustrated	1	2	3	4	5	6
8. When I am listening to music or reading	1	2	3	4	5	6
9. When my boy/girlfriend is drinking	1	2	3	4	5	6
10. When I am worried	1	2	3	4	5	6
11. When I am by myself	1	2	3	4	5	6
12. When my friends are drinking	1	2	3	4	5	6
13. When I feel upset	1	2	3	4	5	6
14. When I have just finishing playing a sport	1	2	3	4	5	6
15. When I am at a nightclub/concert	1	2	3	4	5	6
16. When I am feeling down	1	2	3	4	5	6
17. When I first arrive home	1	2	3	4	5	6
18. When I feel nervous	1	2	3	4	5	6
19. When I feel sad	1	2	3	4	5	6

APPENDIX D

Personality Trait Measure

(introversion-hopelessness, anxiety sensitivity, impulsivity, sensation seeking)

The Substance Use Risk Profile Scale (SURP; Woicik, Stewart, Pihl, & Conrod, 2009)

The Substance Use Risk Profile Scale (SURP)

Instructions: Please indicate how much you agree with each of the follow statements using the following scale:

strongly disagree = 1

disagree = 2

agree =3

strongly agree =4.

1. I am content.
2. I often don't think things through before I speak.
3. I would like to skydive.
4. I am happy.
5. I often involve myself in situations that I later regret being involved in.
6. I enjoy new and exciting experiences even if they are unconventional.
7. I have faith that my future holds great promise.
8. It's frightening to feel dizzy or faint.
9. I like doing things that frighten me a little.
10. It frightens me when I feel my heart beat change.
11. I usually act without stopping to think.
12. I would like to learn how to drive a motorcycle.
13. I feel proud of my accomplishments.
14. I get scared when I'm too nervous.
15. Generally, I am an impulsive person.
16. I am interested in experience for its own sake even if it is illegal.
17. I feel that I'm a failure.
18. I get scared when I experience unusual body sensations.
19. I would enjoy hiking long distances in wild and uninhabited territory.
20. I feel pleasant.
21. It scares me when I'm unable to focus on a task.
22. I feel I have to be manipulative to get what I want.
23. I am very enthusiastic about my future.

APPENDIX E

Depression Measure

*Patient Health Questionnaire (PHQ-9; Spitzer, Williams, Kroenke, & colleagues, 1999)
Pfizer Inc.*

Nine-symptom Checklist

Name _____ Date _____

Over the <i>last 2 weeks</i> , how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

(For office coding: Total Score ____ = ____ + ____ + ____)

If you checked off *any* problems, how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX F

Alcohol Related Consequences Measure

Young Adult Alcohol Consequences Questionnaire (YAACQ; Read, Kahler, Strong, & Colder, 2006)

Below is a list of things that sometimes happen to people either during, or after they have been drinking alcohol. Next to each item below, please mark an "X" in either the YES or NO column to indicate whether that item describes something that has happened to you <u>IN THE PAST 30 DAYS.</u>			
In the <u>past 30 days...</u>		NO	YES
1.	While drinking, I have said or done embarrassing things.		
2.	The quality of my work or schoolwork has suffered because of my drinking.		
3.	I have felt badly about myself because of my drinking.		
4.	I have driven a car when I knew I had too much to drink to drive safely.		
5.	I have had a hangover (headache, sick stomach) the morning after I had been drinking.		
6.	I have passed out from drinking.		
7.	I have taken foolish risks when I have been drinking.		
8.	I have felt very sick to my stomach or thrown up after drinking.		
9.	I have gotten into trouble at work or school because of drinking.		
10.	I often drank more than I originally had planned.		
11.	My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents, or other near relatives.		
12.	I have been unhappy because of my drinking.		
13.	I have gotten into physical fights because of drinking.		
14.	I have spent too much time drinking.		
15.	I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking.		
16.	I have felt like I needed a drink after I'd gotten up (that is, before breakfast).		
17.	I have become very rude, obnoxious or insulting after drinking.		

18.	I have felt guilty about my drinking.		
19.	I have damaged property, or done something disruptive such as setting off a false fire alarm, or other things like that after I had been drinking.		
20.	Because of my drinking, I have not eaten properly.		
21.	I have been less physically active because of drinking.		
22.	I have had “the shakes” after stopping or cutting down on drinking (e.g., hands shake so that coffee cup rattles in the saucer or have trouble lighting a cigarette).		
23.	My boyfriend/girlfriend/spouse/parents have complained to me about my drinking.		
24.	I have woken up in an unexpected place after heavy drinking.		
25.	I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk.		
26.	As a result of drinking, I neglected to protect myself or my partner from a sexually transmitted disease (STD) or an unwanted pregnancy.		
27.	I have neglected my obligations to family, work, or school because of drinking.		
28.	I often have ended up drinking on nights when I had planned not to drink.		
29.	When drinking, I have done impulsive things that I regretted later.		
30.	I have often found it difficult to limit how much I drink.		
31.	My drinking has gotten me into sexual situations I later regretted.		
32.	I’ve not been able to remember large stretches of time while drinking heavily.		
33.	While drinking, I have said harsh or cruel things to someone.		
34.	Because of my drinking I have not slept properly.		
35.	My physical appearance has been harmed by my drinking.		
36.	I have said things while drinking that I later regretted.		
37.	I have awakened the day after drinking and found that I could not remember a part of the evening before.		
38.	I have been overweight because of drinking.		
39.	I haven’t been as sharp mentally because of my drinking.		

40.	I have received a lower grade on an exam or paper than I ordinarily could have because of my drinking.		
41.	I have tried to quit drinking because I thought I was drinking too much.		
42.	I have felt anxious, agitated, or restless after stopping or cutting down on drinking.		
43.	I have not had as much time to pursue activities or recreation because of drinking.		
44.	I have injured someone else while drinking or intoxicated.		
45.	I often have thought about needing to cut down or stop drinking.		
46.	I have had less energy or felt tired because of my drinking.		
47.	I have had a blackout after drinking heavily (i.e., could not remember hours at a time).		
48.	Drinking has made me feel depressed or sad.		

APPENDIX G

College Alcohol Beliefs Measure

College Life Alcohol Salience Scale (CLASS; Osberg, et al., 2010).

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
Parties with alcohol are an integral part of college life.	○	○	○	○	○
To become drunk is a college rite of passage.	○	○	○	○	○
I would prefer it if my college was not considered a party school.	○	○	○	○	○
The reward at the end of a hard week of studying should be a weekend of heavy drinking.	○	○	○	○	○
I think that the students who do not go out to parties or bars are not enjoying their college experience.	○	○	○	○	○
Missing class due to a hangover is part of being a true college student.	○	○	○	○	○
A college party is not a true college party without alcohol.	○	○	○	○	○
Alcohol is not an important aspect of college life.	○	○	○	○	○
Attending parties with alcohol is the easiest way to make friends.	○	○	○	○	○
Drinking alcohol is a social event in which every college student partakes.	○	○	○	○	○
College is a time for experimentation with alcohol.	○	○	○	○	○
A good college party should include drinking games such as beer pong, flip cup, power hour, etc.	○	○	○	○	○
Blacking out or forgetting part or all of the previous night's events is to be expected in college.	○	○	○	○	○
It is okay to drink in college, even if you are under age.	○	○	○	○	○
The chance to drink and party in college is just as important as the academic experience.	○	○	○	○	○

APPENDIX H

Institutional Review Board (IRB) Documentation

PENNSSTATE



IRB Program
Office for Research Protections

Vice President for Research
The Pennsylvania State University
205 The 330 Building
University Park, PA 16802

Phone : (814) 865-1775
Fax: (814) 863-8699
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APPROVAL OF SUBMISSION

Date: June 19, 2017

From: Philip Frum, IRB Analyst

To: John Hustad

Type of Submission:	Modification
Title of Study:	The Comparative Effectiveness of Group and Individual BASICS
Principal Investigator:	John Hustad
Study ID:	PRAMS00034535
Submission ID:	MOD00011177
Funding:	Not Applicable
IND,IDE, or HDE:	Not Applicable
Documents Approved:	None
Review Level:	Expedited
IRB Board Meeting Date:	

On 6/19/2017, the IRB approved the above-referenced Modification. This approval is effective through 5/29/2018 inclusive. You must submit a continuing review form with all required explanations for this study at least 45 days before the study's approval end date. You can submit a continuing review by navigating to the active study and clicking 'Create Modification / CR'.

If continuing review approval is not granted before 5/29/2018, approval of this study expires on that date.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual ([HRP-103](#)), which can be found by navigating to the IRB Library within CATS IRB (<http://irb.psu.edu>). These requirements include, but are not limited to:

- Documenting consent
- Requesting modification(s)
- Requesting continuing review
- Closing a study
- Reporting new information about a study
- Registering an applicable clinical trial
- Maintaining research records

This correspondence should be maintained with your records.

FALLON M. CALANDRIELLO

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EDUCATION

PhD, Counselor Education, The Pennsylvania State University 2018
MA, Counseling Psychology, Northwestern University 2014
BS, Psychology & BA, Sociology, *Summa Cum Laude*, University of Illinois 2009

PROFESSIONAL EXPERIENCE

Counselor, Jessica C. Effrig Psychotherapy LLC, State College, PA, 2017-Present
Community Health Educator, Health Promotion & Wellness, The Pennsylvania State University, 2017-Present
Case Consultation Supervisor, Counseling@Northwestern, The Family Institute at Northwestern University, 2015-Present
Cedar Clinic Supervisor Graduate Assistantship, The Pennsylvania State University, 2014-2016

TEACHING EXPERIENCE

Northwestern University – The Family Institute
COUN 491: Supervised Internship in Counseling (Online course) Summer 2015-Present
The Pennsylvania State University
CN ED 500: Introduction to Counseling & Development Fall 2016
RHS 303: Group Work in Rehabilitation and Human Services Spring 2015/Spring 2016
Northwestern University
HDPS 311: Group Dynamics Spring 2014

PUBLICATIONS & PRESENTATIONS

- **Calandriello, F.**, & Joo, H. (2017). *Food for thought: Understanding nutrition and mental health*. Presentation at the Association for Counselor Education and Supervision (ACES) Conference, Chicago, IL.
- Fullmer, L., Daniels, A., Kostohryz, K., & **Calandriello, F.** (2017). *Building training clinics for the future: How assessments and technology pave the way*. Presentation at the Association for Counselor Education and Supervision (ACES) Conference, Chicago, IL.
- **Calandriello, F.**, Joo, H., & Griffin, D. (2016). *Cyberbullying on campus: Prevalence, impact, and role of counselors*. Presentation at the American Counselor Association (ACA) Conference, Montréal, CN.
- Zalaquett, C.P., Chatters, S.J., Ivey, A., **Calandriello, F.** & Joo, H. (2015). *Chapter 27: Counseling and child rights*. In B.K. Nastasi, S. Hart, & S. Naser (Eds). *The International Handbook on Child Rights and School Psychology*, (Chapter under review).

PROFESSIONAL MEMBERSHIP

- Green Dot Certified in Violence Prevention (2017)
- Member at Large and Social Media and Networking Chair, Pennsylvania Mental Health Counselors Association (2016-2017)
- Member of American Counseling Association (2015, 2016, 2017)
- Member of Association for Counselor Education & Supervision (2015, 2016, 2017)
- Professional Development Chair of Rho Alpha Mu, a branch of Chi Sigma Iota (2015)