COLLEGE STUDENT DRINKING: AN UNDERSTANDING OF LEVEL OF DEPENDENCE, MENTAL HEALTH, FAMILIAL HISTORY, & PERSONALITY DIMENSIONS

A Dissertation in
Counselor Education
by
Heather Anne Atkinson

© 2017 Heather Anne Atkinson

Submitted in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy

August 2017
The dissertation of Heather Anne Atkinson was reviewed and approved by the following:

JoLynn V. Carney  
Associate Professor of Education, Counselor Education  
Dissertation Advisor  
Chair of Committee

Diandra J. Prescod  
Assistant Professor of Education, Counselor Education

Margaret A. Lorah  
Director, Center for Women Students and Affiliate Assistant Professor of Counselor Education

Edgar P. Yoder  
Professor, Agricultural and Extension Education

Richard J. Hazler  
Professor of Education, Counselor Education  
Professor in Charge, Counselor Education

*Signatures are on file in the Graduate School.
ABSTRACT

The Brief Alcohol Screening and Intervention for College Students (BASICS: Dimeff et al., 1999) is a program used in higher education institutions to reduce drinking outcomes. Level of dependence on alcohol is a global and multidisciplinary concern. The connections between mental health (anxiety and depression) have been well established in the literature. Other connections such as family history and personality dimensions are being further explored. This study reviewed the prevalence and consequences of alcohol use as well as the connections to the specific population of college students. Theoretical frameworks from Chickering and Baxter Magolda are discussed. Quantitative analysis including regression was used to examine the connections between level of dependence on alcohol with the mental health, familial history, and personality dimensions of college students. Results indicated that participants were predominately, male, white, 18-19 years-old, freshman or sophomore, domestic students, and resided in campus residence halls. Research question one results showed that gender is a moderator and that participants’ anxiety, other drug use, and number of consequences significantly predicted their level of dependence. In research question two, gender was again a moderator and self-efficacy was statistically significant and negative. Research question three showed that gender is a moderator and that anxiety, impulsivity hopelessness, and self-efficacy were statistically significant. For this third model self-efficacy and hopelessness had negative beta scores.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>vii</td>
</tr>
<tr>
<td>List of Figures</td>
<td>viii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>ix</td>
</tr>
<tr>
<td>Chapter I: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Background of Study</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>6</td>
</tr>
<tr>
<td>Research Questions</td>
<td>7</td>
</tr>
<tr>
<td>Significance of Study</td>
<td>7</td>
</tr>
<tr>
<td>Limitation of Study</td>
<td>8</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>9</td>
</tr>
<tr>
<td>Chapter II: REVIEW OF THE LITERATURE</td>
<td>11</td>
</tr>
<tr>
<td>Brief Overview of Prevalence and Consequences</td>
<td>11</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>24</td>
</tr>
<tr>
<td>Chickering’s Theory of Student Development</td>
<td>26</td>
</tr>
<tr>
<td>Self-Authorship as Holistic Model</td>
<td>29</td>
</tr>
<tr>
<td>General Interventions</td>
<td>32</td>
</tr>
<tr>
<td>Self-Help Work</td>
<td>39</td>
</tr>
</tbody>
</table>
Motivational Interviewing (MI)

College Student Intervention: BASICS

Chapter III: METHODOLOGY

Research Design

Variables

Data Analysis Plan

Chapter IV: RESULTS

Preliminary Data Analysis

Profile of the Study Participants

Descriptive Univariate Analysis of Study Variables

Bivariate Correlational Analysis

Multiple Regression Analysis Procedures Used

Influence of Selected Variables on AUDIT Scores-RQ1

Influence of Selected Variables on AUDIT Scores-RQ2

Influence of Selected Variables on AUDIT Scores-RQ3

Chapter V: DISCUSSION

Discussion of Results

Implications
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengths and Limitations of the Study</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>References</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>APPENDIX A:</td>
<td>Regression Residual Analysis Graphic Examples</td>
<td>130</td>
</tr>
<tr>
<td>APPENDIX B:</td>
<td>Graphical Summary of Moderator Effect for Gender</td>
<td>131</td>
</tr>
<tr>
<td>APPENDIX C:</td>
<td>Institutional Review Board (IRB) documentation</td>
<td>136</td>
</tr>
<tr>
<td>APPENDIX D:</td>
<td>Anxiety Measure</td>
<td>137</td>
</tr>
<tr>
<td>APPENDIX E:</td>
<td>Level of Dependence Measure</td>
<td>139</td>
</tr>
<tr>
<td>APPENDIX F:</td>
<td>Self-Efficacy Measure</td>
<td>140</td>
</tr>
<tr>
<td>APPENDIX G:</td>
<td>Personality Trait Measure</td>
<td>141</td>
</tr>
<tr>
<td>APPENDIX H:</td>
<td>Depression Measure</td>
<td>142</td>
</tr>
<tr>
<td>APPENDIX I:</td>
<td>Curriculum Vita</td>
<td>143</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 2.1:  
Tendencies in Type I and Type II Alcoholics  
35

Table 4.1:  
Profile of study participants for selected variables. (N = 278)  
73

Table 4.2:  
Summary descriptive statistics for interval scale of measurement variables.  
75

Table 4.3:  
Zero order bivariate correlations for study variables.  
78

Table 4.4:  
Zero order bivariate correlations for variables used in first multiple regression.  
82

Table 4.5:  
AUDIT Score Regressed Mental Health, Family History, and Behavioral Indicators.  
83

Table 4.6:  
Zero order bivariate correlations for four predictor variables.  
84

Table 4.7:  
AUDIT Score Regressed on Mental Health and Self-Efficacy Variables.  
85

Table 4.8:  
Zero order bivariate correlations for regression for research question three.  
86

Table 4.9:  
AUDIT Score Regressed on Mental Health and Personality Dimension Variables.  
88
LIST OF FIGURES

Figure 3.1:
Race/Ethnicity of Student Participants. 58

Figure 1:
Participant Flow Diagram (Hustad et al., 2014) 60

Figure 4.1:
Race/Ethnicity of Student Participants 72
Acknowledgements

I would like to thank my doctoral committee for feedback and encouragement throughout this process. Dr. Diandra Prescod, I appreciate your thoughts, positivity, and willingness to take on the intense timeline of the last year of my dissertation work. You have held up a mirror to show me my growing edges and the true potential of this study. To Ed Yoder, we have had quite a journey together through my course work and dissertation process. You have a way of bringing ease and comfort into content that is challenging for me. I admire your patience, compassion for others, and ability to help students understand the world of statistics. Best wishes for your retirement! To Peggy Lorah, from our start with my addictions course to the many conversations in your office, where I have always felt at home… I am grateful to have had these times with you. You have helped me to expand my view of addictions and to see the world of counseling in a new light. To JoLynn, I am thankful for you; your presence, advice, and tenacity. As I have told you many times, you are my safe space. I am fortunate and grateful to have been one of your students. You have given me so many life lessons over the last seven years that I will take with me; as you always said I promise to “Trust the Process.”

I would like to give a GIANT thank you to Dr. John Hustad, Dr. Linda LaSalle, Suzanne Zeman, and the HPW team. It was thanks to my experiences and you willingness to bring in a GA from Counselor Education that I was able to complete this study and learn so much more about this field.

To Chris Andrus, you have been there since the very beginning constantly helping me to navigate this world of Penn State. For every phone call, class enrollment, concern, check-in and hugs - thank you! You are a gift to the students, faculty and staff of this program.
To the many friends, coworkers, and peers who have supported and encouraged me throughout this journey – Amanda, Maria, Kisha, Ashley, Matt, Clair, Kelley, Alex, Bobbie, Nathan, Hyoyeon, Alicia, Julie, Russ, Jeff, Tanja, Courtney, Janet, Del, Jeremy, and Suzanne – Thank you! Your kind words, hugs, leftovers, and listening ears have sustained me throughout this journey.

To my family, thank you for holding on through the many ups and downs of my “three year program”. This has been a rollercoaster ride and then some. For the many hugs, prayers, positive thoughts, and words of encouragement I am truly thankful! You all have been with me and rooting for me since the baths in the kitchen sink. It is amazing to think that my “Post Hole Digger” degree is now a reality. To my Mom and Dad, Paul and Dolly Atkinson, I so appreciate you staying with me on this ride. I know it has not always been easy and those late night phone calls were pretty intense sometimes. I am thrilled to have gone “further” in this educational journey as you wished and dreamed I would. Your love and encouragement have lead me to where I am today.
CHAPTER ONE: INTRODUCTION

Background of Study

Mental health and substance use, especially alcohol use, have long been an issue for college students. Sumstine, Cruz, Schroeder, Takeda, and Bavarian (2017) speak to the prevalence of this issue stating “mental health problems may be an underlying cause of alcohol or drug use, and substance use occurs more frequently among individuals with certain mental health problems, such as depression and anxiety (U.S. Department of Health & Human Services, 2016). The American College Health Association report discusses some of the consequences for students who drink (American College Health Association, 2012). These consequences have physical costs (hangovers, headaches, vomiting, nausea, difficulty sleeping, poor quality sleep, excessive caloric intake, unpleasant drug interactions/side-effects, injury to self or others), financial costs (purchasing alcohol), personal costs (unwanted sexual encounters, sexual assault, campus policy violations, legal citations (e.g., underage possession or use, supplying to minor, driving while under the influence, or public intoxication), and ultimately life altering costs (death, suicide).

It is with these thoughts of prevalence and consequences in mind, that one looks to the issue of college student drinking and what can be learned and done to assist these young adults. The next segment will look to overview the concepts within the field of research on alcohol intervention as well as the specifics of this study.

In the college student population, there are a number of concerns including prevalence of alcohol use, alcohol related consequences, ways in which substance use occurs, and increasingly becomes problematic. College students are living within a complex time in their own development and this can impact the way that they think about drinking and how they act related
to alcohol in various settings. For this reason, college students’ drinking and substance use behaviors need to be framed through developmental context. Substance use among college students is quite complex as is the environment and drinking cultures on college campuses. I have chosen two guiding frameworks to guide this study. One is a foundational theory - Chickering and Reisser’s (1993) College Student Development theory and an integrative theory - Baxter Magolda’s (1992) model of self-authorship. Both frameworks overlap and focus primarily on crucial transitional phases associated with student development during the collegiate years. Also, both Chickering and Reisser’s theory as well as Baxter Magolda’s hold implications for the substance use intervention associated with this study.

Chickering who is an innovator among theorists of student development highlighted the responsibility for institutions of higher education to promote healthy student development in addition to providing an intellectual learning environment. Several decades of research, (Evans, Forney, Guido, Patton, & Renn, 2010) have only highlighted this need. It has become more and more apparent that institutions need to understand student development during their college years as a way to promote health and wellness as well as academic potential (Locke, Bieschke, Castonguay, & Hayes, 2012). Chickering and Reisser (1993) proposed seven paths or vectors associated with students’ developmental transition during their collegiate journey. The paths incorporate interpersonal and intrapersonal components. The vectors include: (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. Each vector is further defined and the link to college student drinking is explore more fully in chapter two.
Baxter Magolda’s Development of Self-Authorship model has been framed as an ecological approach to college student development (Evans, et. al., 2010). She used Kegan’s model of lifespan development that incorporated both cognitive and affective processes in her longitudinal study that followed her own students through their development as emerging adults and into their professional careers (Evans, et. al., 2010). Within the academic environment, students will find their values, beliefs, and behaviors challenged by interactions in the diverse and complex world of higher education (Barber, King, & Baxter Magolda, 2013). The process of self-authorship then can be seen as a necessity for success during college and well beyond. Baxter Magolda (2014) provides qualitative results from her longitudinal study that provide significant insight into the transitional process of self-authorship. In brief, the first phase, students are heavily influenced by others without any internal or critical evaluation of how the values, beliefs, and behaviors of others fit within their own lives (Baxter Magolda, 2014). The second phase is entitled “Crossroads” (2014, p. 302) where students are dealing with the conflict between external influence and control versus the internal voice that speaks directly to their own belief systems. As students continue to evolve based on the challenges and diverse experiences they face, they begin to develop and author their lives (Baxter Magolda, 2014). This authorship as it relates to the ability to develop a system of inclusive (breadth & depth) beliefs (Baxter Magolda, 2001) that guide life-long decisions. Self-authorship is further discussed and integrated into the current study in chapter two.

Exploring the history related to the ways of dealing with substance abuse is important for this current study. This historical perspective goes from *moral model* to the *biopsychosocial model* and explores the different levels of societal acceptance over time. As a continuation of this historical overview, general interventions associated with alcohol including both self-help and
therapeutic approaches are reviewed. Approaches such as 12 step programs, Alcoholic Anonymous, and SMART Recovery are discussed. Motivational Interviewing, a central component to this research study and a therapeutic approach, has been shown to be effective with undergraduate students (Hustad, Mastroleo, Kong, Urwin, Zeman, LaSalle, & Borsari, 2014). The efficacy of other approaches will be discussed.

The purpose of this study was to examine approaches that influence substance use as well as a number of characteristics including anxiety, depression, self-efficacy, sensation seeking, and impulsivity that have been found to influence alcohol use. Each of these variables and current research are discussed, including the interdisciplinary and global nature of this concern.

The links between anxiety and substance use have a long-standing history. A number of recent studies were reviewed to examine the depth of these links including how parenting attributes, recidivism in forensic psychiatric patients, bipolar diagnosis, and recovery with CBT are influenced by anxiety and alcohol. Parental coldness seemed to have a significant association with anxiety disorders and/or other disorders of children later in life (Otowa, Gardner, Kendler, and Hettema, 2013). Substance use combined with mental health diagnoses in forensic psychiatric patients was an “important factor for violence and reoffending” (Pickard & Fazel, 2013, p. 1). Olfson, Mojtabai, Merikangas, Compton, Wang, Grant and Blanco (2017) found ties with anxiety and bipolar but not necessarily to substance use.

Links with substance use and depression are also often found in the literature. Depression and substance abuse links including suicide attempts in individuals in rehabilitation, adolescents being treated for comorbid depression/substance abuse, prevalence of depression in patients who use substances, and the effectiveness of behavioral activation treatment in comorbid depression with substance use disorder. Ortiz-Gomez, Lopez-Canul, Arankowsky-Sandoval (2014) found
that risk for substance abuse and depression could increase in individuals living in situations with sexual abuse and domestic violence. Rohde et al. (2016) found that adolescents who were depressed and did not respond to treatment (CBT and family-based treatment) had low family cohesion. Mustafa and Zafar (2016) discovered that depression and substance use are associated in significant ways for patients in Pakistan.

Researchers often view self-efficacy in terms of a mechanism for individuals to lower risk of using substances. Self-efficacy is being explored in current research in multiple disciplines including continuing and aftercare treatment of women offenders, substance abuse treatment with religious coping, and childhood maltreatment and abstinence motivation with ‘drug addicts’. Examples of current research include that trauma history and continuing care has significant effects with substance use, psychiatric severity, and self-efficacy outcomes (Saxena, Grella, & Messina, 2016). Giordano, Prosek, Loseu, Bevly, Stamman, Molina, Callahan and Calzada (2016) connected *positive religious coping* with higher levels of self-efficacy and *negative religious coping* to lower levels. Also, research from China found that “childhood maltreatment was negatively associated with self-concept, self-efficacy, and abstinence motivation” (Lu, Wen, Deng, & Tang, 2017, p.12).

Sensation seeking and impulsivity are considered here together because at times they are linked in the literature. Research that specifically focuses on these links includes, Quinn and Harden (2013) and Holmes, Hollinshead, Roffman, Smoller, and Buckner (2016). These studies explore these links by looking at youth to see if increased substance use can be predicted by sensation seeking and impulsivity and young adults to see if brain structure linked to sensation seeking and impulsivity.
Other researchers separate out these two variables and their influence on sensation seeking and impulsivity. Jensen, Chaissin and Gonzales (2017) looked at sensation seeking and how neighborhood advantage or disadvantage influences its effects, stating “effects were weakened as neighborhood disadvantage increased, with the most advantaged neighborhoods exhibiting the strongest link between sensation seeking and substance initiation” (p.1). Additionally, sensation seeking has been connected to substance use, specifically prescription stimulants misuse (Sumstine, Cruz, Schroeder, Takeda, & Bavarian, 2017). Stautz, Dinc, and Cooper (2017) who are from the United Kingdom found that rash impulsiveness was a predictor for “typical and problematic substance use” (p.118). To end on a positive note, Kaynak, Meyers, Caldeira, Vincent, Winters, and Arria (2013) found that “parental monitoring has a protective effect regardless of sensation seeking level” (p.1461).

This examination of the research, history, theory, and prevalence of alcohol use in the general population, as well as the college student population, led me to think critically about this issue and how it could be studied.

**Statement of Problem**

Alcohol continues to be a widely-established problem in the college population that has been intensified by social networking sites (Thompson & Romo, 2016). Locke, Bieschke, Castonguay, and Hayes, (2012) examined findings about college student mental health over a twenty-year period. Their conclusion reached from the data appear to indicate an increased distress level among college students across the decades. Anxiety has been linked with multiple behaviors including the consumption of alcohol, Milosevic, Chudzik, Boyd, and McCabe (2016) suggest that treatment strategies which emphasize the “connections between anxiety and alcohol” are needed (p.96). There have been many research studies on college students’ alcohol
use, including reviews of such research (Carey, Scott-Sheldon, Garey, Elliott, & Carey, 2016), there remain specific pieces that need to be integrated in the research such as family history, hopelessness, impulsive behavior, sensation seeking, and self-efficacy. The problem of alcohol and other substance use is interdisciplinary and countries across the globe are trying to understand it, this want of understanding led to the development of this author’s research.

**Research Questions**

An interest in answering if the connections between level of dependence on alcohol and variables related to mental health (anxiety, depression), family history, and personality dimensions (hopelessness, impulsive behavior, sensation seeking, and self-efficacy) is what led to the research questions in this study:

- **RQ1**-Does a student's' anxiety (OASIS) and depression (PHQ-9), family history, other drug use, and number of consequences predict level of dependence (AUDIT)?
- **RQ2**-What is the influence of anxiety (OASIS), depression (PHQ-9), and self-efficacy (DRSE) on level of dependence (AUDIT)?
- **RQ3**- Does anxiety (OASIS), depression (PHQ-9), hopelessness (SURP subscale), impulsive behavior (SURP subscale), sensation seeking (SURP subscale), and self-efficacy (DRSE) predict level of dependence (AUDIT)?

**Significance of Study**

The benefits of this study are twofold as both institutions and individuals will be able to gain knowledge from these research findings. Institutions will be able to better understand, enhance, and refine their current interventions (e.g. BASICS) as well as potentially establishing new alcohol interventions for college students. The study findings can help higher education policy decisions by depicting new ways of dealing with alcohol use and safety on campuses.
Student affairs personnel will have enhanced understanding about the links between mental health, familial factors, and personality dimensions related to drinking. Counseling services on college campuses will have more depth of understanding about effective treatment for students related to mental health, familial, and personality factors.

Individuals will also benefit because they will be able to further understand the influences of alcohol both toward ‘well known’ variables (anxiety, depression, and family history) and toward other variables that researchers are learning more about in current research (hopelessness, impulsive behavior, sensation seeking, and self-efficacy. These individuals will understand how their level of dependence on alcohol as a college student is influenced by other factors. The results of this study will show us things about difference between college students using gender as a moderator.

**Limitation of Study**

There are several limitations for this research as we do not live in a *perfect world*. The data used are from a larger study and all of the data points were collected on measures, which were chosen prior to my work with the alcohol intervention team. This did not allow me to add other measures or gather additional details from the participants at the time point that the data were collected. These data were collected from students from 2010 to 2012.

In addition, the data that were provided by the participants were self-reported, which is a concern due to know validity issues with this form of data collection. Data collection via self-report is a commonly used research method, however, it is possible that participants may expand or reduce their actual experiences depending on their perception. In this study, the concern is that students could minimizing or maximizing the true level of alcohol use. While there are questions of validity with self-report, this method is beneficial due to its time efficient and cost effective
nature. Similarly, random sampling of participants was not feasible due to the nature of the mandated participation of students.

Another limitation of the study is the nature of the participants; in two key ways, the fact that they were mandated to attend and the composition of the institution population. The undergraduate students were mandated to attend the alcohol intervention program due to the particular institution’s conduct policies on alcohol violations. The practice of mandating students is not uncommon to higher education, however, the fact that students were mandated versus voluntary participants could have impacted their data such as their responses to the mandated instruments, motivation to change, and so forth. Also, the undergraduate students who are a part of this study were predominately white, male, and were enrolled at a northeast institution known to have high tuition cost that would not easily allow individuals from every economic class to attend.

**Definition of Terms**

*College/Undergraduate student.* Individuals who have matriculated to an institution of higher education beyond high school. The age range of these individuals included 18-24 years of age. The students could be registered for part or full time during the semester that they were mandated to the intervention program; full time being 12 credits or greater, part time being any amount lower than 12 credit.

*Motivational Interviewing (MI).* This is the form of intervention while working with college students on behavioral change related to alcohol intervention in this study. The use of reflective listening, rapport building, and use of open and closed ended questions with student participants to motivate change is also a central focus of this intervention.
Gender. When this term is presented to student participants on the intervention survey, it is in terms of a binary, biological descriptor (e.g. male, female).
CHAPTER TWO: LITERATURE REVIEW

In this paper, I explore college student drinking, general interventions, and college student interventions. In the college student population, there are a number of concerns including prevalence of alcohol of alcohol use, alcohol related consequences, ways in which substance use occurs, and increasingly becomes problematic. College students are living within a complex time in their own development and this can impact the way that they think about drinking. An overview of the general interventions associated with alcohol will be discussed. These general interventions refer to both self-help and therapeutic approaches. In terms of therapeutic approaches, Motivational Interviewing has been shown to be an effective strategy with students (Hustad, Mastroleo, Kong, Urwin, Zeman, LaSalle, & Borsari, 2014). Brief motivational interview and a specifically the Brief Alcohol Screening and Intervention for College Students will also be discussed.

Brief Overview of Prevalence and Consequences

College student drinking is a concern for universities and the communities in which these schools are situated. The 2012 National College Health Association Report lists approximately 24.4 percent of students state that they have never consumed alcohol, 13.6 percent that have used in the past but not in the last month, and 62 percent of students who have consumed alcohol. The findings also indicated that students’ perceptions of other’s alcohol use were elevated. Students’ perceived that 4.4 percent of their peer would have never used alcohol, 2.7 would have used but not in the last 30 days, and 92.9 percent of their peers would have used alcohol the past 30 days (http://www.acha-ncha.org/docs/ACHA-NCHA-II_ReferenceGroup _ExecutiveSummary_Fall2012.pdf).
Consequences for students who drink may include hangovers, headaches, vomiting, nausea, difficulty sleeping, poor quality sleep, injury, sexual assault, excessive caloric intake, financial cost, unpleasant drug interactions/side-effects, injury to self or others, unwanted sexual encounters, campus policy violations, legal citations (e.g., underage possession or use, supplying to minor, driving while under the influence, or public intoxication, etc.), and suicide (http://www.acha-ncha.org/docs/ACHA-NCHA-II_ReferenceGroup_ExecutiveSummary-Fall2012.pdf). In addition, drinking even just for one night can completely block REM sleep leaving an individual feeling fatigued, irritable, and anxious (Nascimento, Carlson, Amaral, Logan, & Seggio, 2015). While long term drinking, can lead to liver failure, and extreme financial cost as well as taking tolls on the individual's support network of family and friends.

**General Population and College Students**

College students, other adolescents, and adults experience issues with alcohol misuse and abuse; hence, it is important to take a look at the factors that influence these individuals. Often substance use within an individual is seen as a disease meaning the person either has a problem or does not. In this way, we lose the strengths of the individuals and focus on what is ‘wrong with them.’ In focusing only on what is wrong, we can lose sight of the whole individual and ignore important context such as what is going on in their life, what stressors they have, how they are able to cope, their cultural background and how it influences their use, their family system related to encouraging or banning drinking, and so forth.

How individuals perceive their use is also of prime importance in this complex issue. For example, a student who had 4 beers one night and received a DUI citation after leaving the party, may see his/her drinking as a horrible problem that must be dealt with immediately versus a student who has 4 beers in one night and has friends who drink upwards of 15 drinks in an
evening may see her/his drinking as trivial. In this way, an individual’s perspective even after consuming the same amount of alcohol has major impact on perception and behavior.

In the next section, I will discuss a broad overview of the context surrounding alcohol use, including the issues that surround use, the factors that are influenced by use, and then finally how the college student population fits into this larger picture. Substance use is influenced by many characteristics including anxiety, depression, self-efficacy, sensation seeking, and impulsivity. These influences will be explored and their importance discussed via a literature review of the broad research on substance use. Additionally, themes of the global importance and interdisciplinary interests will be discussed as the literature is examined.

**Anxiety and Substance Use**

The literature on substance use has a long-standing history of linking it with anxiety. A number of recent studies are discussed below to examine the depth of these links including how parenting attributes, recidivism in forensic psychiatric patients, bipolar diagnosis, and recovery with CBT are influenced by anxiety and alcohol.

Otowa, Gardner, Kendler, and Hettema (2013) analyzed data from 2,609 male, adult twins who were interviewed about parenting attributes including coldness, protectiveness, authoritarianism as well as their history of seven mental health diagnoses and substance use of their lifetime. The measures for this study was the Parental Bonding Instrument (PBI), originally composed of 25 items that look at bonding, was modified for their study by using a 16-item version of the PBI. The study used univariate structural equation modeling (SEM) in addition to looking at the influence of genetic and environmental factors on parenting. The interdisciplinary authors, (psychiatry and neuropsychiatry fields), are also from two different countries (United States & Japan). Otowa, et al. (2013) discuss that coldness in parenting may be a contributing
factor to depression and anxiety. Parental coldness seemed to have a significant association with anxiety disorders and/or other disorders of children later in life. Specific coldness behaviors that parents may exhibit include “harsh punishment of a child, poor communication and less time spent with child” (p.1846).

Pickard & Fazel, (2013), who are from the United Kingdom completed a thorough review of the literature on substance use and crime from January of 2010 through November of 2012. The authors searched through three databases: Pubmed, Embase and Cinahl using text word search within the title or abstract for the following “substance*, drug*, alcohol*, crim*, [and] viol*” (p.2). The authors found themes in the scholarly literature such as the relationship between substance use, crime, violence, comorbid mental illness, repeat offending [recidivism], and historical factors that occur in forensic psychiatric patients. Historical factors refer to such things as “a history of child abuse, posttraumatic stress disorders, attention-deficit and disruptive behaviour disorders, high psychopathology scores” as well as familial factors (Pickard & Fazel, 2013, p.3). The authors found that substance use combined with mental health diagnoses in forensic psychiatric patients was an “important factor for violence and reoffending” (p.1).

Olfson, Mojtabai, Merikangas, Compton, Wang, Grant and Blanco (2017) looked at results from over 34,000 adults using the National Epidemiologic Survey on Alcohol and Related Conditions. The authors discuss how adults who have been diagnosed with bipolar often have an anxiety disorder, but those individuals with bipolar and manic symptoms often have substance use disorders. The authors used logistic regression analyses to examine the relationship between bipolar diagnosis and which type of episode comes first manic or depressive. They found that if an individual experiences bipolar with manic episodes first, the odds of depressive episodes increase followed by comorbid anxiety, but not necessarily a substance use disorder. In contrast,
if an adult experiences bipolar with depressive episodes first, then it is likely to increase a manic episode following the depressive episode as well as later anxiety disorders but not necessarily a substance use disorder. The authors of this text all hail from the United States of America.

Milosevic, Chudzik, Boyd, and McCabe (2016) propose that when individuals have a substance abuse disorder it less likely that they will be able to recover from anxiety disorders. Similar results are seen where it is more difficult for an individual who has both depression, anxiety, and substance use to recovery versus an individual who has anxiety alone. Also, if an anxiety disorder is present when in treatment for alcohol related substance use, there is a greater risk of relapse. The authors, who all are from Ontario, Canada, look at using cognitive behavioral therapy (CBT) with multiple diagnoses of mood, anxiety, and substance use disorders. They found that many of their participants, 45 individuals total who completed one of the 13 iterations of treatment, were in the contemplation or preparation/action stage (Milosevic et al., 2016). The CBT treatment was found to significantly reduce ‘excessive drinking’ including “reductions in the drinking days per week (reduced by one day)” (p.95). Milosevic et al. (2016) discuss that these findings are consistent with previous literature, citing such studies as Hides, Carroll, Catania, Cotton, Baker, Scaffidi, and Lubman (2010) as well as Hunter, Watkins, Hepner, Paddock, Munjas, Osilla, and Perry (2012). Milosevic et al. (2017) state “the greatest rates of reliable or clinically significant change were observed in excessive alcohol use, anxiety, and most notably stress” (p. 96).

**Depression and Substance Use**

Depressions is a common characteristic found in the literature on substance use. The interdisciplinary and global research discussed below demonstrate some of the links between depression and substance abuse including suicide attempts in individuals in rehabilitation,
adolescents being treated for comorbid depression/substance abuse, prevalence of depression in patients who use substances, and the effectiveness of behavioral activation treatment in comorbid depression with substance use disorder.

Ortiz-Gomez, Lopez-Canul, Arankowsky-Sandoval (2014) discuss depression and substance use are considered worldwide mental health concerns. The authors cite key studies such as Bromet, et al. (2011) and Degenhardt, et al. (2008). The authors, who were all in Mexico, worked with 57 patients who took the mini-international neuropathic interview, which is a questionnaire on depression, suicide attempts, and substance abuse, as well as the Spanish version of the Holmes and Rahe scale (about life events). They then completed logistic regression test and chi square to look at the relationships between the variables. Ortiz - Gomez at al. (2014) go on to state that family history is also a risk factor for depression and suicidal attempts. Their study found that participant who “reported living domestic abuse violence situations, and suffering from sexual abuse… could enhance the risk for both depression and later substance abuse” (p.14). Marmorstein (2011) discusses that depression puts individuals at risk for drug consumption. Ortiz-Gomez, Lopez-Canul, and Arankowsky-Sandoval’s (2014) findings on depressed and suicidal participants also support this link between depression, suicide and substance use.

Rohde, Turner, Waldron, Brody, and Jorgensen (2016) studied adolescents with depression and substance use disorders (SUD). These authors, who were based in the United States in Oregon, worked with 170 adolescents who had comorbid depressive disorder and substance use disorders (SUD). The individuals were randomized into one of three treatments, where there seven point of measurement for an individual's level of depression. The adolescents where then grouped into four categories based on their response to treatment: mildly depressed
responders, depressed responders, depressed non-responders, and depressed with recurrence. The authors found that recurrence of depression was closely linked with hopelessness, suicide attempts, and starting in treatment toward the end of an academic year. Rohde et al. (2016) found that adolescents who were depressed and did not respond to treatment (CBT and family-based treatment) had low family cohesion. The authors stated that treatment for substance use disorders alone is not enough and does “not adequately address the needs of youth with co-occurring depression” (p.10).

Mustafa and Zafar (2016) are a psychologist and a demonstrator respectively of the Sheikh Zayed Hospital and Medical College in Pakistan. They conducted research on one hundred male patients that had histories of substance use. The authors evaluated patient for depression based on the ICD 10 (international statistical classification of diseases and related health problems). They used SPSS 20 to identify that there was a “significant association between substance use and depression” (Mustafa and Zafar, 2016, p.12). Mustafa and Zafar echo the importance of this research when they stated that “[s]ubstance use is a grave mental health issue, the people of Pakistan h[ave] little awareness regarding the menace and it’s lethal effects” (p.12).

Ross et al. (2016) are researchers from Australia and the United States of America. The authors looked at 200 individuals with comorbid depression and SUD who were currently in treatment. The individuals were divided into two treatment groups and measurements were taken prior to intervention, at three months, and one year. The depression level for each individual was assessed using the Patient Health Questionnaire (PHQ-9), which is also used in my research. The level of substance dependence was assessed using the Severity of Dependence Scale (SDS). The researchers were in progress when they wrote up this study protocol but they stated that other
studies have found 12-month follow-up rates of around 80% citing Tesson, Mills, Ross, Darke, Williamson, and Harvard (2008) and Cunningham, Walton, Tripathi, Outman, Murray, and Booth (2008).

**Self-efficacy and Substance Use**

Self-efficacy can be thought of as a way for individuals to lower risk of using substances. For example, Milosevic, Chudzik, Boyd, and McCabe (2016) discuss that their participants “reported significant and moderate increase in their drinking and drug refusal self-efficacy upon treatment [CBT] … approximately 30% more confident that they could resist the urge to use alcohol and/or drugs” (p.96). The segment below will look to review some research on self-efficacy in terms of continuing and aftercare treatment of women offenders, substance abuse treatment with religious coping, and childhood maltreatment and abstinence motivation with ‘drug addicts’.

Saxena, Grella and Messina (2016), who are U.S. based researchers, looked at outcomes for 85 women offenders who were in trauma-informed continuing care treatment and 108 women offenders who were in prison or community aftercare treatment. The authors especially looked at “trauma exposure to examine whether continuing care moderates this effect on substance use, psychiatric severity, and self-efficacy outcomes at follow-up” (p. 99). Saxena, Grella, and Messina found trauma history and continuing care has significant effects with substance use, psychiatric severity, and self-efficacy outcomes. These authors also discuss Bandura’s (1977) social cognitive theory, which discussed self-efficacy defined as “the extent to which one believe that one can successfully execute behaviors needed to produce a desired outcome” (Saxena, Grella & Messina, 2016, p. 101).
Giordano, Prosek, Loseu, Bevly, Stamman, Molina, Callahan and Calzada (2016) reviewed self-efficacy research and found that there are many associations such as self-efficacy, college persistence, exercise, and even oral care. Particularly poignant they found research that connects self-efficacy with substance abuse. The authors also explore that there are two types of self-efficacy: behavior specific and general. They stated “higher levels of general self-efficacy may allow for a recovering individual to address a variety of stressors and therefore reduce the need to cope with substances” (Giordano et al., 2016, p. 36). Hassel, Nordfjaern, and Hagen (2013) also speak to this connection and describe what they frame as an ‘inverse relation’ between drug use (including alcohol) and self-efficacy. Giordano et al. (2016) worked with 121 participants in mandated, voluntary or undisclosed styles of treatment. The participants completed two measures Brief Religious Coping Scale and General Self-Efficacy Scale. The authors found that positive religious coping predicted higher levels of self-efficacy and negative religious coping predicted lower levels.

Lu, Wen, Deng, and Tang, (2017) looked at 816 individuals that they termed ‘drug addicts’ that were in detoxification units and had them complete the following measurements: childhood trauma questionnaire, Tennessee self-concept scale, general self-efficacy scale, and drug abstinence motivation questionnaire. The authors are from China and The Netherlands while their participants were all from China. Lu, Wen, Deng, and Tang used structural equation model analysis to find that “childhood maltreatment was negatively associated with self-concept, self-efficacy, and abstinence motivation. Self-concept was positively associated with self-efficacy and abstinence motivation. Conversely, significant association between self-efficacy and abstinence motivation did not exist” (2017, p. 52).

**Sensation Seeking, Impulsivity, and Substance Use**
Sensation seeking and impulsivity are at times linked in the literature. Quinn and Harden (2013) and Holmes, Hollinshead, Roffman, Smoller, and Buckner (2016) explore these links by looking at youth to see if increased substance use can be predicted by sensation seeking and impulsivity and young adults to see if brain structure linked to sensation seeking and impulsivity. The studies following will look at sensation seeking in terms of individuals in early adolescence - how it links to substance use initiation later, with substance use and mental health in terms of behavioral patterns, and how parental monitoring linked with likelihood of alcohol or cannabis use. The research below also includes information on impulsivity and how for undergraduate students it was found as a predictor for substance use.

Quinn and Harden (2013) who are U.S. researchers examined longitudinal research on 5,632 people from ages 15 to 26 in the National Longitudinal Survey of Youth to look at both impulsivity and sensation seeking predicted increased substance use, specifically for alcohol, cigarettes, and marijuana. Dick et al. (2010) proposes that a host of research has found that adolescent and young adults’ alcohol use is influenced by impulsivity. Quinn and Harden define impulsivity as “a tendency to act without considering consequences” and go on to define sensation seeking as “a preference for varied, novel, and exciting experiences” (2013, p. 223). The authors’ findings support that impulsivity and sensation seeking are “separate but related facets of personality” (p. 234) Quinn and Harden discuss that impulsivity rates change over time. Their results indicate that “slower decreases in impulsivity were associated with greater increases in alcohol, marijuana, and cigarette use after accounting for initial levels of impulsivity and substance use.” Also, “slower decrease in sensation seeking was associated with a greater increase in alcohol use” (p. 234). Interestingly the authors go on to state that it is suggested that “impulsivity change was associated with change in frequency of alcohol use, the other
personality-substance use correlated changes may have reflected associations with the timing of substance use initiation” (p. 234). They go on to state “those who decline more gradually with regard to impulsivity or sensation seeking may become increasingly susceptible to peer influences and personal temptations, and they may initiate or escalate their substance use” (p. 235). Finally, Quinn and Harden state “disentangling change in impulsivity and sensation seeking from post adolescent changes in social roles will be an important goal for future research [...] previous research has implied, in particular, the transition to college and marriage as important for the progression of substance use” (p. 235).

Holmes, Hollinshead, Roffman, Smoller, and Buckner (2016), who all hail from Connecticut and Massachusetts, looked at young adults between 18-35 years of age. The individuals were screened for psychiatric illnesses and medication use. The individuals had MRI and completed online personality and cognitive measures. These authors used previously published research (Evenden, 1999) to define impulsivity including “a lack of reflectiveness and planning, a tendency toward rapid decision making and action, a loss of inhibitory control, and carelessness” (p. 4039) and sensation seeking (Zuckerman, 1979) defined as “characterized by a need for varied, novel, intense, and stimulating experiences and a willingness to take risks for the sake of such experiences” (p. 4039). Holmes, Hollinshead, Roffman, Smoller, and Buckner found that individuals with reduced cortical thickness also had links to sensation seeking but also “generalized to self-reported motor impulsivity […] and correlated with heightened alcohol, tobacco, and caffeine use” (p. 4038). The authors also state that “the relations between sensation seeking and brain structure were evident in participants without a history of alcohol or tobacco use, suggesting that observed associations with anatomy are not solely a consequence of substance abuse” (p. 4038).
Some researchers explore sensation seeking and impulsivity separately as distinct constructions. Sensation seeking has been framed by Jensen, Chassin and Gonzales (2017) as “disinhibition” (p. 1). The authors and others they cite (e.g., Zucker et al 2011; Iacono et al 2008) propose sensation seeking as one facet under the broader umbrella of disinhibition (characterized by difficulty constraining behavior & impulses) thought to represent an endophenotype for transmission of genetic liability via the “externalizing pathway” (p. 1) to substance use and problem behavior. Jensen, Chassin, and Gonzales (2017), U.S. researchers, completed a study with 454 youth. The authors looked at “sensation seeking in early adolescence (mean age = 12.16) and its relations with later substance use initiation (mean age 15.69)” (p. 1). Jensen, Chasin, and Gonzales used questions from the sensation seeking scale developed by Zuckerman in 1979 as well as census data, family’s income below the poverty line, whether a family was on public assistance, “ percentage of residents who did not graduate high school, percentage of female headed households, and percentage of unemployed residents” (p.5). Jensen, et al. found that “sensation seeking effects were weakened as neighborhood disadvantage increased, with the most advantaged neighborhoods exhibiting the strongest link between sensation seeking and substance initiation” (p.1).

Sumstine, Cruz, Schroeder, Takeda, and Bavarian (2017) from California looked at 1,053 college students who self-reported substance use and mental health. The authors used an ANOVA, chi-squared, and multivariate censored regression model analyses to find that mental health was related to race/ethnicity across all forms of reported substance use. The authors propose that “the persistent trend of substance use may be explained, in part, by the fact that prevention programs may focus too much on specific substances rather than the underlying factors related to substance use, such as mental health difficulties. Moreover, many health
behavior interventions focus on proximal/cognitive predictors of behavior, such as self-efficacy and attitudes, as opposed to more ultimate-level behavior correlated.” (p. 2). Sumstine, et al. (2017) and others (e.g., Locke, et al., 2012) view mental health issues as significant in college students and related to substance abuse. The authors discuss that sensation seeking has also been connected to substance use in the form of prescription stimulants misuse citing multiple studies such as Arria, Caldeira, Vincent, O’Grady, and Wish (2008) and Bavarian, Flay, Ketcham, and Smit, (2013). Other links to this particular type of prescription stimulants misuse include “inattention, hyperactivity, academic concern and psychological distress” (Bavarian et al., 2013, p. 2).

Kaynak, Meyers, Caldeira, Vincent, Winters, and Arria (2013) who are from Pennsylvania, Maryland, and Minnesota completed research with 1253 university students. The authors looked at sensation seeking and parental monitoring related to the likelihood of college student alcohol and/or cannabis dependence, during their freshmen year on campus. The authors defined sensation seeking using Zuckerman’s (2002) definition the “general need for thrills and excitement, a preference for unpredictable situations and friends, and the need for change and novelty” (Kaynak, Meyers, Caldeira, Vincent, Winters, & Arria, 2013, p. 1458)

Kaynak, et al. (2013) make the connection between substance use during students’ senior year of high school and drinking behavior as college freshman. The authors findings show it was highly influential as “high school drinkers were three times more likely to meet criteria for alcohol dependence during the first year of college than non-drinkers, and high school cannabis users were 13 times more likely than nonusers to meet criteria for cannabis dependence” (p. 1460). The authors’ findings were also related to sensation seeking as sensation seeking and cannabis use were positively correlated in their college sample. Interesting, however, was that
parental monitoring did not factor into alcohol or cannabis dependence in their study. The authors state this finding was “unexpected but indicates, at least for alcohol dependence, that parental monitoring has a protective effect regardless of sensation seeking level” (p. 1461).

Stautz, Dinc, and Cooper (2017) from the United Kingdom looked at 486 undergraduate students over three studies. The authors looked at the UPPS-P model which stands for negative Urgency, Premeditation, Perseverance, Sensation seeking and Positive urgency to see if it “predicted typical and problematic alcohol and cannabis use after accounting for reward drive, rash impulsiveness and trait neuroticism” (Stautz, Dinc, & Cooper, 2017, p. 118). They found that rash impulsiveness was a predictor for “typical and problematic substance use” (p. 118). This is supported by other researchers that Stautz, Dinc, and Copper reference in their article such at Birkley & Smith (2011) who discuss that impulsivity seems to be a “particularly important predictor of substance use and related problems” (Stautz, Dinc, & Copper, 2017, p. 118).

It is valuable to place college aged drinking into a developmental context as a way to understand the complexity of the issues related to the environment on college campuses. In the following sections, College Student Development theory and Baxter Magolda’s theory of self-authorship and meaning making are discussed as frameworks for this research.

Theoretical Framework

There has been increased awareness that Student Affairs professionals must be trained in helping skills in order to assist all students in their developmental journey through academia. This mandate is found in the Council for the Advancement of Standards in Higher Education Master’s-Level Graduate Program for Student Affairs Professional Standards and Guidelines (2003). The guidelines identify individual and group interventions as the core areas. They
include: (1) student development theory, (2) student characteristics and the effects of college on students, (3) individual and group interventions, (4) organization and administration of student affairs, and (5) assessment, evaluation, and research.

The awareness for developing student affairs professionals’ ability to implement helping skills has come largely from the enhanced understanding of mental health concerns and interpersonal distress that exists among students (Benton & Benton, 2006; Kadison & DiGeronimo, 2004; Soet & Sevig, 2006). This understanding is based in research findings with college students showing significant levels of substance use, mental health issues such as PTSD, depression, suicidal ideation and other self-injurious behaviors (Locke, Bieschke, Castonguay, & Hayes, 2012).

Having examined the broad literature that connects anxiety, depression, self-efficacy, sensation seeking, and impulsivity to substance use it is helpful to put this information into the context of the college experience. There are a host of student development theories over the years that have been proposed and used in research. Evans, Forney, Guido, Patton & Renn (2010) outline foundational developmental theories such as psychosocial identity development, moral development theory and Chickering’s theory of identity development. Also, included in this comprehensive text are integrative theories such as the development of self-authorship and Schlossberg’s transition theory. This next segment reviews two theorists of college student development theory that are integral to this study - Arthur W. Chickering and Marcia B. Baxter Magolda, and how their theories connect to the research literature.

**College Student Development Theory**

Evans, Forney, and Guido-DiBrito (1998) divide the theory into four categories: (1) cognitive-structural, (2) psychosocial, (3) typological, and (4) person-environment. These four
categories can help us to think about the main components of how a student interacts with their world and how this can change over their four years of college and beyond.

**Chickering’s Theory of Student Development**

Student development was not always seen as the primary purpose for institutions of higher education as the focus was on educating the student in specific areas (Chickering & Reisser, 1993). Chickering proposed his theory of student development in 1969 and was a pioneer in the efforts of higher education to recognize the obligation these institutions had to promote healthy student development in addition to providing an intellectual learning environment. It has become more and more apparent that institutions need to understand student development during their college years as a way to promote student health and wellness as well as academic potential. Of course, students’ paths do not happen in isolation and can be influenced by the nature of the institution. Specifically related to this research, would be the institution’s culture for substance use among the students. In 1993, Chickering and Reisser proposed seven paths that they termed *vectors* as a way to frame the students’ paths during this important and transitional time of their lives.

The seven vectors include: (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. The concepts related to each vector show the breadth and depth of Chickering and Reisser’s 1993 theory as they incorporate many intrapersonal and interpersonal components all of which are related to healthy development. The following section will expand on these vectors.

The first vector, *competence*, contains a several different levels of developing skills and abilities that support intrapersonal and interpersonal student successes. Intrapersonally, these
competencies include intellectually being able to learn and think critically and engaging in activities that bring about wellness such as athletics and other artistic endeavors. On the interpersonally side of the vector, students gain the ability to develop and maintain good relationships with others (Chickering & Reisser, 1993).

The second vector is important as managing emotions during times of transition can be a significant challenge to wellbeing (Chickering & Reisser, 1993). Mental health professionals understand how important managing emotions can be as a protective factor in meeting successful personal and professional goals (Rivers, Brackett, Omori, Sickler, Bertoli, & Salovey, 2013). College students need to be aware of and recognize their emotions and then have the ability to manage these emotions in reasonable ways. Self-awareness and self-control of intense emotions such as anger, fear, sadness and even happiness are at the core of vector two. This vector is relevant for the current study as substance use can be seen as a risky behavior (Rivers, et. al., 2013).

Moving through autonomy to interdependence is the third component of Chickering and Reisser’s (1993) theory. This vector represents major growth for college students as they move between the want to be independent and the drive to belong. This tension can be significant especially as it relates to peers’ influence on a number of issues including drinking culture (Scholl & Schmitt, 2009). A balance can be achieved where students gain the ability to have interpersonal relationship that are based on equality and are reciprocal in nature. These students would be free from being controlled by others, have a sense of their own self-sufficiency, and can interact with others in productive ways (Chickering & Reisser, 1993).

Developing mature interpersonal relationships as the fourth vector allows college students the opportunities to learn about themselves and others from their diverse peers
(Chickering & Reisser, 1993). Being able to explore ideas with peers from different backgrounds with vary worldviews and values. "At its heart is the ability to respond to people in their own right" (Chickering & Reisser, 1993, p. 48). Mutual healthy relationships are at the core of this theoretical component and relate to the previous vector in terms of a balance between autonomy and interdependence (Chickering & Reisser, 1993).

The fifth vector of establishing identity is a complex set of pivotal abilities and experiences that are interrelated with the previous four. Gaining a sense of self requires the ability to be comfortable and content with conceptualizing the self from one’s physical appearance that could be related to family and ethnic background to one’s gender and sexual orientation. Chickering and Reisser proposed "A solid sense of self emerges, and it becomes more apparent that there is an ‘I’ who coordinates the facets of personality, who 'owns' the house of self and is comfortable in all of its rooms" (1993, p. 49). Establishing an identity has been identified as a protective factor for college students in terms of binge drinking, drug use and other risky behaviors (Schwartz, et. al., 2010).

Developing purpose, the sixth vector, could almost be considered a platform for the previous ones as having some direction and sense of purpose is needed to build individuals’ competencies, establish interpersonal relationships, and develop personal identities. College students choose majors, make major life decisions regarding their career trajectories and so forth. These intentional future plans would be integrated with their interests, career goals, personal and family values. Having a sense of purpose is integral in guiding these decision-making processes (Chickering & Reisser, 1993). Pearson, Brown, Bravo, & Witkiewitz (2014) found in their study exploring mindfulness in college students with depressive and anxiety symptoms and alcohol-related problems that purpose in life is a mediating factor in reducing negative outcomes.
Finally, the last vector of *developing integrity* demonstrates an expansion of students related to their previously held worldviews, values, and belief systems (Chickering & Reisser, 1993). College students arrived on campus with many previously held assumptions about the world in which they live. Many of these suppositions are challenged throughout their college careers as they emerge from adolescence and into adulthood. The task at this vector is for students to reevaluate these previous beliefs and values and replace them with ones that have been shaped by critical thinking skills and then to apply the new-found values in their personal lives. Pompeo, Kooyman and Pierce (2014) propose that personal integrity is an important component in the development of college women and how they adjust to college life including alcohol use. Similarly, Barry (2007) discusses Greek membership of college men and women related to socialization and alcohol related beliefs and behaviors. Socialization of college students and their ability to succeed in this seventh vector is important in terms of negative consequences.

**Self-Authorship as Holistic Model**

Baxter Magolda’s (1992) theory on self-authorship has many conceptual overlaps with Chickering and Reisser (1993) student development theory. Both sets of authors view students’ years in college as a significant experience of transition.

Baxter Magolda (1992) proposed that the transition from youth to adulthood contains a central construct that is termed *self-authorship*, which is necessary for college students’ next phase of life as adults in a diverse and complex world. Values, beliefs, and behaviors are challenged and it becomes necessary for persons to develop cross-cultural competencies and maturity in order for students to adapt as emerging adults (Barber, King, & Baxter Magolda, 2013). Carpenter and Vallejo Peña (2016) make the case that institutions of higher educations
have even more responsibility as they intentionally seek to include underrepresented and first generation students on their campuses. The authors propose that Baxter Magolda’s model of self-authorship can be integral in this responsibility for all students’ needs as they transition to adulthood.

Baxter Magolda’s model points to the need for students to eventually develop their own internal constructs related to the self, including values, identity, and interpersonal relationships. Stage one of this process, Baxter Magolda (2001) termed *Following External Formulas* because individuals uncritically adopt others’ formulas for making decisions about how to construct beliefs, identities, and relationships. In other words, individuals who make meaning by following external formulas accept authority figures’ beliefs without question, define themselves through others’ expectations, and “act in relationships to acquire approval” (Baxter Magolda, 2001, p. 40). When considering college aged drinking and the impact of parental monitoring, if external voices encouraged control of drinking behaviors, authorities have been shown to have a direct effect on reducing risk for alcohol dependence in college students (Kaynak, et. al., 2012). While research has shown that external voices of peers also have a strong effect on drinking behaviors. Barnett, Ott, Rogers, Loxley, Linkletter, and Clark (2014) report that weekly amount of alcohol consumption was significantly related among college females and their peers.

Baxter Magolda proposes, within stage one, a type of continuum for self-authorship and meaning making. On one end, college students gain their meaning making from external sources. The author terms this end of the continuum as “external reliance” (2014, p. 302) where students will follow others without any critical evaluation of how the external perceptions and behaviors fit within their own value systems.
Baxter Magolda’s stage two of the evolution of self-authorship might be visualized as a center on the continuum. This transitional space is termed the “Crossroads” (Baxter Magolda, 2014, p. 302). As understandable from the terminology, crossroads are a place where college students are developing related to their thinking about external voices and their own voices. “People enter the Crossroads as they begin to question external authorities, work through the Crossroads as they process the tension between their emerging internal voices and external influence, and find their way out of the Crossroads when their internal voices have developed sufficient strength to coordinate external influence” (Baxter Magolda & King, 2012, p.14). This space of conflict between internal and external authority and power is integral to development and related to this study, has an impact on substance use related to the drinking culture (Scholl & Schmitt, 2009).

College students continue their evolution (Baxter Magolda, 2014) as they work to become authors of their own lives. This end of the continuum houses the space where college students have self-authorship, which the author calls “internal definition” (p. 302). These students have the capacity to critically evaluate for themselves and reject or integrate others’ perceptions and behaviors. Chickering and Reisser's (1993) seven vectors also speak to this development of self-authorship and meaning making as a major milestone facing students as they mature through their collegiate years and beyond into their professional careers. Though Baxter Magolda’s own longitudinal research indicate that self-authorship continues to evolve after college (Baxter Magolda, 2014) as the world of work and a diverse society bring unique pressures to bear on this transition process. Baxter Magolda discusses the internal foundation as the “solidified and comprehensive system of belief” (Baxter Magolda, 2001, p. 155) that guides life-long decisions.
These well established and much used theoretical frameworks, Chickering and Reisser (1993) and Baxter Magolda (1992) ground the current study and have implications for Brief Alcohol Screening and Intervention for College Students (BASICS) (Dimeff, Baer, Kivlahan, Marlatt, 1999) as an intervention model. Briefly, the experience of being mandated to BASICS for substance use intervention allows college students to experience a direct formational event, which provides these students with crucial information about their drinking behaviors in a novel and interactive manner. The intervention process creates a critical learning experience for students that can challenge their beliefs and values as they relate to the benefits and consequences of substance use. Ideally, students who engage in the BASICS program will begin to develop their own self-authorship, competency, identity, purpose, and integrity as a result of the intervention.

The literature and theory discussed previously leads us into a discussion of the history of alcohol use. Tracing the history of alcohol in the United States brings an important context to the current study to allow the reader to interpret current findings related to the various models that over time help to guide perception and treatment modalities. This historical perspective of substance use, with particular attention to alcohol, will trace society’s views over time as well as the ebb and flow of different levels of acceptance over time. The next segment will look to provide an overview that will span different generations and stretch to the context where we are currently.

General Interventions

History of Dealing with the Problem of Substance Use and Addiction

Cynthia Faulkner discusses an early history of alcohol in her chapter of *Substance Abuse Counseling: Theory and Practice* (2009). She states that prior to the moral model, alcohol was a
part of daily life for hundreds of years. There were still issues with alcohol during that timeframe. Examples of this include 18th century England when both adult and young children had problematic alcohol consumption due to very low priced gin. In the United States in the 18th and 19th century, individuals might be considered morally flawed if they were unable to ‘hold your liquor.’ The moral model began to gain strength in the Civil War era, when alcohol and drinking too large an amount of it was considered sinful (Faulkner, 2009).

The moral model began when our country did and started to fade at the end of prohibition. During the moral model period, typically religious individuals would view addiction as a moral issue based on the behaviors of drunken persons. The persons of that time, coming into the United States of America, included puritans and people who had a history of criminal activity, often alcohol related. Examples from Christian literature, when thinking about the context the puritans had, would be Adam and Eve and Noah. In the first example, ingesting a substance that is forbidden leads to seeing the world in a different way. Also, getting another person to ingest such a substance leads to blame, shame, and guilt. In the Noah example, a flood is used to get rid of sinners who are fornicating and drinking, aka God is starting over (P. Lorah, personal communication, January 25, 2011). The moral model came to its height in 1919 with the legislation of the 18th Amendment, the beginning of prohibition. In 1933, the amendment was repealed. During that fourteen-year span, however, it was illegal to manufacture, transport or sell alcohol (Faulkner, 2009). Society’s relationship with alcohol continued and shortly thereafter a new model was posed.

In the medical or disease model, late 1930s, 1940s and 1950s, it was viewed that there was something medically wrong with an individual. The person would follow a pattern of use, tolerance, addiction, detox, abstinence, and relapse. This is a process and seen as a cycle that an
individual would often go through a number of times. From this model, arose things such as 12 step models, Alcoholics Anonymous (AA), and other behavioral modification programs. AA, was founded in 1935, started a shift of thinking about alcoholism as an illness rather than a moral weakness of the individual (Faulkner, 2009). The disease model continued to be substantiated when in 1956 the American Medical Association and in again 1969 the American College of Physicians recognized alcoholism as a disease. Prior to this in 1950, Dr. E. M. Jellinek published a v-chart downward into alcoholism and then upward into recovery like a ‘v’, which described the journey an individual takes in terms of symptomatology (Faulkner, 2009).

The V chart is a useful figure meant to help ‘visualize’ the disease of alcoholism. The ‘v’ chart is briefly described below. In various parts of this chart, individuals can return to a recovery mode of functioning. Those who switch to recovery more rapidly have more of a slight dip rather than a full deep ‘v’. The descent includes such characteristics as “preoccupation with alcohol (thinking about next drink), increased memory blackouts, tremors and early morning drinks, loss of job, geographical escape attempted, unable to work,” (Faulkner, 2009, p.90) and so forth. Faulkner (2009) proposes that this process of descending down the ‘v’ can take anywhere from two to twenty-five years. The descent can end in two ways with one being death and the other “complete defeat admitted and calls for help” (Faulkner, 2009, p.90). The ascent includes such concepts as “drying out/medical help, belief that new life is possible, application of spiritual values begins, increase in emotional stability, increased interest/activity in group therapy, confidence of employer begins, begin contentment in sobriety,” etc. (Faulkner, 2009, p.90). This upward slope of the ‘v’ leads to recovery just as the slight dip individuals did, who did not descend into the full ’v’. This ‘v’ chart fits well within the medical model as it looks for
medical intervention to spur the individual out of the deepest part of their ‘v’ and toward recovery.

Researchers began looking at alcohol in new ways in regard to genetic theories, by using biological research, twin studies, adoptions studies, and intergenerational studies. Faulkner (2009) discusses that there are hypotheses that Type I alcoholism is “transmitted cross-gender (from mothers to sons or grandfathers to granddaughters)” and Type II alcoholism is transmitted “to the same gender (fathers to sons or grandmothers to granddaughters” (p. 93). Faulkner (2009) also suggested that there are tendencies in terms of characteristics that are hypothesized for each type (see Table 2.1 below).

Table 2.1: Tendencies in Type 1 and Type II Alcoholics

<table>
<thead>
<tr>
<th>Type I Alcoholic</th>
<th>Type II Alcoholic</th>
</tr>
</thead>
<tbody>
<tr>
<td>exhibit less criminal behavior</td>
<td>---</td>
</tr>
<tr>
<td>demonstrate less dependent personality traits</td>
<td>show more dependent personality traits</td>
</tr>
<tr>
<td>act less violent when drinking</td>
<td>more violent behaviors while drinking (fighting and arguing)</td>
</tr>
<tr>
<td>later onset of the disease (after age 25)</td>
<td>show signs of compulsive drinking (e.g. blackouts)</td>
</tr>
</tbody>
</table>

While no specific genes have yet to be found to support these genetic claims, it has been demonstrated that those identified as alcoholics metabolize alcohol differently that persons who are not alcoholics. Genetic predispositions toward alcoholism have been found in identical twin, males specifically. Additionally, adoption studies have supported the concept of nature over nurture, meaning that if a child’s biological family has a history of alcoholism is more likely that
they too will demonstrate these traits regardless of their whether their adoptive family is addicted to substances or not (Faulkner, 2009).

In the sociocultural model, substance use is seen in the context of people being products of their families, environments, and culture. ‘Environment is the key to why we are addicted’ (P. Lorah, personal communication, January 25, 2011). Faulkner (2009) discuss that “attitudes toward alcohol consumption and abuse vary from culture to culture and greatly affect the amount and context of alcohol consumption” (p. 102). Peer groups among adolescents can be especially influential by setting the mores of the ‘community’ of that particular group. Rosa, Huang, Brook, Sanchez, Rojas, Kanamori, Cano and Martinez (2016) propose that few studies look at the sociocultural determinants of substance use in the adult Latina population. Their study specifically looked at 267 adult Latina mothers and daughters over ten years for the five following variables: “(1) Individual Determinants (e.g. socioeconomic conditions, mental health, and medical status); (2) Cultural Determinants (e.g., acculturation to US culture); (3) Interpersonal Determinants (e.g., interpersonal support, relationship stress, mother-daughter attachment, intimate partner violence); (4) Community Determinants (e.g., neighborhood related stress); and (5) Institutional Determinants (e.g., religious involvement, involvement with the criminal justice system)” (p. 1). The authors used hierarchical modeling to examine these determinants with specific links to involvement in criminal activity being positively linked with alcohol use. This research demonstrates the many contributing factors that can lead to alcohol use when we think in a sociocultural context.

The psychological model suggests that the addiction itself is not a problem, but rather the psychological problem is the issue. For example, Lorah states “I believe that addiction disorders are really OCD however, all OCD diagnosis are not necessarily addiction (P. Lorah, personal
A review of the mindfulness training research by Judson, Elwafi, and Davis (2013) demonstrated incorporating psychological models into substance abuse can be effective. These authors actually explored a Buddhist psychological model, which they proposed “distinguish bodily, affective, cognitive, volitional, and conscious components of emotional reactions to triggers” (p. 368). Within this model, an addictive behavior originates with a craving that translates into a behavior associated with the substance. The authors posit this as a causal relationship - an automatic response to a stimulus that could be a cognition, an emotion, a particular sight or smell as well as other bodily sensations.

The behavioral or social learning model included that addiction is a learned behavior that comes as a result of our interactions with others (P. Lorah, personal communication, January 25, 2011). Faulkner (2009) discusses the theories that started from psychologists such at Skinner, Watson, and Thorndyke, who hypothesized that all behavior is learned from one’s environment, including such behaviors related to alcohol consumption. Social learning theory, which came along later from Albert Bandura, theorized that modeled and reinforced behaviors become learned behavior in relation to alcohol interactions (Faulkner, 2009).

In essence, systems model states that we are products of our families and that we are doing things to preserve the family (P. Lorah, personal communication, January 25, 2011). Martinez, Huang, Estrada, Sutton, and Prado (2016) looked at the systems model in terms of the ecodevelopmental theory which “provides a multidimensional framework that helps explain the influence of family, school, peer and acculturation mechanisms” (p.4). Martinez et al. discuss family functioning as an influence of substance use on Hispanic adolescents. The authors used five family functioning subscales to look at the effects of substance use of 90 days, including “parent involvement, positive parenting, parent-adolescent communication, family
communication, and parent monitoring” (p.12). Structural Equation Modeling (SEM) was used to analyze the interaction effects. The authors found that there was a direct effect from Hispanicism to family functioning. There was a negative link with substance use in the past and family functioning, meaning that positive family functioning can facilitate lower substance use.

Biopsychosocial model holds to the concept that there are many causes and they are all interacting. This model proposes that abstinence works best, but there are other ways to treat (P. Lorah, personal communication, January 25, 2011). Faulkner (2009) refers to this model as an integrated approach, which “conceptualizes behavior as a function of mutual determination and reciprocal effects of an individual, the environment, and behavior” (p.107). The word integrated is used as a way to be inclusive of multiple forces, influence on an individual and their choices that lead them to either abuse or not abuse alcohol or other substances.

The overview of the above models leads me to a discussion of a timeline of the history of alcohol interventions. These interventions below correspond with some the models discussed previously and evolve over time. In looking to reflect on both the models of substance use and the current research that was examined previously, one can think about the research efficacy of the interventions aligning with different models. An example could be the study by Lu, Wen, Deng, and Tang, (2017) who looked at individuals that they termed ‘drug addicts’ that were in detoxification units. This could be seen as the authors prescribing to the medical or disease model. While there have been changes in the interventions, as new exploratory research is conducted, it does not mean that “older” interventions are completely phased out. As an example, Alcoholic Anonymous is still in practice currently.
Self-Help Work

There has been a long history of substance use through human history. In the 1930s, individuals in the United States began to implement self-help groups. These groups were designed to function as community members helping their peers. The ideas behind these programs are discussed below.

Twelve-Step Programs

These types of self-help programs include intervention that is done by one’s peers. These interventions are based off of a disease model meaning that the individual either has the disease or is cured. There is a strong emphasis on the need for an individual to have a relationship with God so that (s)he can receive help to stop their addiction. These programs do not focus exclusively on alcohol rather they focus on addiction as an overarching umbrella and then each addiction has its own group underneath this (ex: Alcoholic Anonymous, Narcotics Anonymous, etc.). The twelve steps which were published by Alcoholic Anonymous include:

1. We admitted we were powerless over alcohol—that our lives had become unmanageable.
2. Came to believe that a power greater than ourselves could restore us to sanity.
3. Made a decision to turn our will and our lives over to the care of God as we understood Him.
4. Made a searching and fearless moral inventory of ourselves.
5. Admitted to God, to ourselves, and to another human being the exact nature of our wrongs.
6. Were entirely ready to have God remove all these defects of character.
7. Humbly asked Him to remove our shortcomings.
8. Made a list of all persons we had harmed, and became willing to make amends to them all.

9. Made direct amends to such people wherever possible, except when to do so would injure them or others.

10. Continued to take personal inventory, and when we were wrong, promptly admitted it.

11. Sought through prayer and meditation to improve our conscious contact with God as *we understood Him*, praying only for knowledge of His will for us and the power to carry that out.

12. Having had a spiritual awakening as the result of these steps, we tried to carry this message to alcoholics, and to practice these principles in all our affairs. (http://12step.org/steps/the-12-steps.html)

In addition, to the twelve steps the twelve traditions are also a part of these self-help interventions. The traditions were also published by Alcoholic Anonymous and are used to guide the groups in terms of public relations, spirituality, and finance. The twelve traditions include:

1. Our common welfare should come first; personal recovery depends upon AA unity.

2. For our group purpose there is but one ultimate authority—a loving God as He may express Himself in our group conscience. Our leaders are but trusted servants; they do not govern.

3. The only requirement for AA membership is a desire to stop drinking.

4. Each group should be autonomous except in matters affecting other groups or AA as a whole.
5. Each group has but one primary purpose—to carry its message to the alcoholic who still suffers.

6. An AA group ought never endorse, finance, or lend the AA name to any related facility or outside enterprise, lest problems of money, property, and prestige divert us from our primary purpose.

7. Every AA group ought to be fully self-supporting, declining outside contributions.

8. Alcoholics Anonymous should remain forever non-professional, but our service centers may employ special workers.

9. AA, as such, ought never be organized; but we may create service boards or committees directly responsible to those they serve.

10. Alcoholics Anonymous has no opinion on outside issues; hence the AA name ought never be drawn into public controversy.

11. Our public relations policy is based on attraction rather than promotion; we need always maintain personal anonymity at the level of press, radio, and films.

12. Anonymity is the spiritual foundation of all our traditions, ever reminding us to place principles before personalities. (http://12step.org/traditions/the-12-traditions.html)

These steps and traditions guide the addict who meet and provide support for their peers. One of these twelve step groups that has the largest number of members worldwide is Alcoholics Anonymous.

**Alcoholic Anonymous.** This self-help intervention is based on a group meeting. The group meeting is typically led by a former addict who has been a member of Alcoholics Anonymous (AA) for a number of years. The individual will set up the meeting by pulling out materials and preparing the space. A typical AA meeting includes each of the member
introducing themselves, often there is a discussion around a specific topic, and various members
discuss their thoughts around this topic. Sometimes a testimonial is given by one of the member
about how they are doing with their addiction.

While self-help programs have been in existence for a longer period of time, their
effectiveness has been questioned on multiple occasions. The following will look at some of the
therapeutic approaches that have been used in alcohol intervention.

**SMART Recovery.** Sullivan, Blum and Watts (2012) discussed the use of SMART
Recovery which is a facilitator-led, structured discussion group. These groups use cognitive
behavioral therapy, rational-emotive behavior therapy in terms of their theory and techniques to
assist individuals. The basics tenets of this approach include:

- “Building and maintaining motivation, coping with urges, managing thoughts
  feelings and behaviors, and teaching members to live a balanced life
- Focus on self-empowerment
- Members are invited to stay involved with group after gaining independence from
  addiction” (slide 8).

The researchers looked at two different phases of data collection and have found trends toward
individuals’ success. While group work can be beneficial for the individual due to peer support
and camaraderie, there are individual interventions that have been found to be very effective.

Beck, et al. (2017) completed a review of data as evidence for SMART recovery with
“adults with problematic alcohol, substance, and/or behavioral addiction” (p1). The authors
analyzed 12 studies, three of which were specifically focus on effectiveness. Attendance was
found to be significantly tied with change. The authors pose that “SMART Recovery may
represent a more time efficient method for promoting clinical change” (p.19). They indicate that
SMART has short total attendance than other 12 step programs. Beck et al. (2009) also discussed that research need to be conducted on the influence of SMART Recovery versus other evidence based treatments.

**Individual Interventions.** Larimer, Kilmer, and Lee (2005) look at individual interventions for the treatment of alcohol use. The authors discuss that while there are many kinds of interventions very little research has been done to show effectiveness of other interventions outside of a one-on-one approach. In 2002, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) put together a task force to review alcohol interventions and their effectiveness. There were three tiers of programs identified and the 3 programs that landed in the top tier were all individual interventions. Some of the reasons for this were that the individual interventions focused on behavior change as well as the theoretical framework for it and the risk factors associated with higher levels of drinking. Interventionist can be confident in using an individual intervention with this information. However, some other concerns can arise for college campuses such as barrier to implementation.

**Barriers to Success in College Students through Treatment Approaches**

There are three main barriers to treatment and prevention: (a) programmatic/institution barriers, (b) personal barriers, and (c) conceptual barriers (Dimeff, et al., 1999). Under the umbrella of programmatic or institutional barriers, there is the concern that providing treatment around student drinking effectively gives the student a pass that it is okay to drink. While the alcohol intervention/prevention programming may make note to the legal limits (0.08 BAC if you are 21 years of age or older and 0.02 BAC if you are 18-20 years of age) often there are concerns about presenting programming that is not abstinence based. Dimeff et al. (1999) state these concerns can stem from the idea that “condoning the use of alcohol by underage drinkers
may actually result in increased usage of alcohol among drinkers, or in a decision by abstainers to drink” (p.13) Unfortunately, abstinence-based programming such as Drug Abuse Resistance Program (D.A.R.E) and the “Just Say No” campaign have not made a significant impact in the drinking rates for young adults (Johnson et al., 1996).

Dimeff et al. (1999) discuss how personal barriers may include student’s inability to see their drinking as problematic or excessive. When a student has this type of framework for their beliefs they are unlikely to perceive risk factors as linked to their alcohol use. In this way, a student will be less motivated to change their behaviors (aka reduce their consumption of alcohol). Dimeff et al list six reasons that are common across college students as to why they have little concern about their consumption patterns:

- “Everyone drinks in college; it’s an essential part of socializing.
- Weekend parties with alcohol are great ways to have fun and unwind after a grueling week of studying and examinations.
- They are in excellent physical health and have no intentions of continuing their current pattern of use once they graduate from college.
- Drinking alcohol and partying are part of growing up, and a way to assert their freedom and independence.
- Alcohol use makes it possible to interact with potential dating partners
- College is the last time to have fun before entering the real world of world and other adult responsibilities” (pp. 14-15).

Conceptual barrier for the student can include their inability to relate to abstinence-based models such as Twelve Step programs and Alcoholics Anonymous. These programs are disease based meaning that an individual with an addiction either has the disease or does not. The
biopsychosocial models, however, view addiction as being placed on a spectrum which an individual has the ability to move along as time passes. The all-or-nothing concept for abstinence programs can result in a student not viewing themselves as a member of that group. Student often see themselves as drinking in the same pattern as their peers and do not see their pattern as high-risk. They also have a much shorter history of misuse so they do not see themselves experiencing the same consequences as member of these abstinence based groups (Dimeff et al., 1999).

**Motivational Interviewing (MI)**

This type of therapeutic approach focuses on being non-judgmental, motivating change in the client, focusing on goals, and maintaining a client-centered approach. The spirit of MI includes collaboration, evocation, and autonomy. Miller and Rollnick (2002) define these three components: (a) collaboration being a counseling “partnership that honors the client’s experience and perspectives,” (b) evocation meaning that “the resources and motivation to change are presumed to reside within the client,” and (c) autonomy meaning that “the counselor affirms the client’s right and capacity for self-direction and facilitates informed choice” (p. 35). This spirit helps to shape the interactions between counselor and client while empowering the client to follow their own goals. The spirit of MI was developed from the original principles that Miller established for MI in 1983, which include expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy (Miller & Rollnick, 2002). There are four main skills that providers need to have in order to be effective at using MI. Those skills are the ability to give affirmations to the client, use of open-ended questions, use of reflective listening, and ability to give the client summary statements (Levensky, Forcehimes, & O’Dononue, 2007). The key concepts for MI include:
1. Motivation to change is elicited from the client, and is not imposed from outside forces

2. It is the client's task, not the counselor's, to articulate and resolve his or her ambivalence

3. Direct persuasion is not an effective method for resolving ambivalence

4. The counseling style is generally quiet and elicits information from the client

5. The counselor is directive, in that they help the client to examine and resolve ambivalence

6. Readiness to change is not a trait of the client, but a fluctuating result of interpersonal interaction

7. The therapeutic relationship resembles a partnership or companionship (Miller, Zweben, DiClemente, & Rychtarik, 1992).

Miller and Rollnick (2012) discuss four process that are a “needed throughout MI” (p. 33) These four processes include asking open questions, affirming, reflective listening, and summarizing. These four skills have been used since the beginning of MI as ways to encourage change in individuals and are similar in multiple ways to the 7 key concepts to those discussed by Miller et al. in 1992.

While MI has been shown to provide evidence-based improvement, there can be time constraint associated with intervention. There have been modifications made to MI that reduce the time taken to implement the strategies; these modified programs are referred to as Brief Motivational Interviewing programs.

**Brief Motivational Interviewing (BMI)**

This is an adaption of motivational interviewing meant for short term interventions. Rollnick and Heather (1992) describe that there are eight strategies that can be
used with an MI spirit, but in a way that the strategies do not take up more than 5-15 minutes each. The strategies include:

1. Opening Strategy: lifestyle, stresses and substance use
2. Opening Strategy: health and substance use
3. A typical day/session
4. The good things and the less good things
5. Providing information
6. The future and the present
7. Exploring concerns
8. Helping with decision-making

These strategies mirror MI and can be done in a shorter time frame which is beneficial when meeting with large numbers of individuals. In this way, BMI is well suited to implementation on a college campus.

There are various college student drinking interventions that exist (Carey, Scott-Sheldon, Garey, Elliott, & Carey, 2016). Many of these interventions are not evidence-based nor have they been shown to be effective. In the following section, I will discuss the therapeutic approach used in this study with a college student settings that has been shown to be effective on substance use (Hustad, Mastroleo, Kong, Urwin, Zeman, LaSalle, & Borsari, 2014).

**College Student Intervention: BASICS**

Brief Alcohol Screening and Intervention for College Students (BASICS) is a process that begins with an event or ‘incident’ as it is termed (Dimeff, Baer, Kivlahan, Marlatt, 1999). These alcohol related events include being written up for an on-campus violation, off-campus citation, and/or a hospital visit. For the student, BASICS is a mandated
process. Depending upon the severity of their event, the student is required to complete the BASICS program, placed on academic probation, and or receive a campus policy violation. Sanctions are administered by an office of student conduct. Various institutions of higher education implement BASICS in various ways. The following sections outline BASICS as it is applied to the institution where the research is being conducted.

The BASICS program uses a harm-reduction (Dimeff, et al., 1999) approach meaning that the program is not designed to tell students that they must stop drinking or that they have a problem with alcohol. Abstinence based viewpoints are not used; rather a non-judgmental atmosphere that helps students to discuss their risk behaviors and how they can avoid alcohol-related consequences is employed.

The following information is paraphrased from the BASICS manual outlining the details/specifics of the BASICS process. The student is required to attend for two to four sessions. The first session includes building rapport with the student, describing the process of BASICS program, talking to the student about confidentiality, as well as supervision and team support (Dimeff, et al., 1999). Following these initial topics, the provider checks in with the student to clarify any questions they may have about the BASICS program, confidentiality, its exceptions, and the roles that both individual and group supervision play for providers. It continues with hearing the incident from the student’s point of view, talking about the good versus not-so-good of alcohol use, and psychoeducation about standard drinks. The student then completes computer-based assessments, the provider checks for suicidal ideation and follows the set protocols when appropriate. The student is scheduled for their second session and is given a journal sheet to track their drinking behaviors until the second session. The second session includes re-establishing rapport, touching on confidentiality, checking in to see if the student has
any questions on the information that was covered last session, going over their journal sheet, discussing their personalized normative feedback packet (PNF), making any referrals for continuing on to session 3 and 4, scheduling their follow up appointment, and having the student complete a satisfaction survey. Both sessions 1 and 2 are done with the same provider within a health center. Sessions 3 and 4 are outside of the specific BASICS process and are completed in a typical counseling and psychology center found in institutions of higher education. In the additional sessions, the student can explore their risk factors in more depth as well as gain support for their alcohol usage and mental health needs.

In the above description, there are a number of items that are not fully described. The following content is meant to clarify those components for readers.

**Rapport.** When building rapport with students, the provider is encouraged to learn more about the student. Reynolds (2009) states that there are three phases of helping when it comes to student affairs professionals, such as a staff member in a BASICS program. The phases of helping include: “establishing rapport with the student and exploring the dilemma, gaining insight into the dilemma and focusing, and taking action” (p. 134). For BASICS staff, this rapport building can but does not always include learning where the student is from, what their classification is (i.e.: first year, fourth year, graduate student, etc.), how long they have been at this university, if they transferred from another campus, learning their major as well as how they developed an interest in that field, discussing any special interests they have (student organizations, hobbies, sports teams, etc.), and other information that the student may choose to disclose. Providers may or may not choose to disclose some of their own interests or other information about themselves that parallels the student.
**Confidentiality.** One of the most important aspects when beginning a session with the student includes discussing confidentiality (ACA Code of Ethics, Section B.1.c.). For the student, this means the information the providers discuss is not disclosed to the office of Student Conduct, professors, parents, other students, etc. The exceptions to this confidentiality are discussed. Specifically, if the student discloses that they plan to commit suicide, harm anyone else, or if there is any child abuse involved in the conversations with the provider that that information will have to be passed on to the proper authorities.

**Supervisor and team supervision.** In conjunction with confidentiality, the student is told about the provider’s supervisor and the team support or supervision that occurs. Reynolds (2009) explains that supervision is an essential skill to student affairs professionals because it allows staff to focus on “enhancing awareness, knowledge, and skills” (p. 219). The name and location of the provider’s direct supervisor is given. The concept of team supervision is explained to the student; the group of providers consults with each other about student cases in order to provide the best possible service for that client. These consultations are all done in a confidential manner and in a way, which intends to improve the student’s experience.

**Event/incident description.** (Institution specific language) Some providers choose to look for information regarding whether the student has been referred to the BASICS program based on an alcohol-related hospital admission. The event description is always written and recorded from the student’s point of view. Occasionally, the student will not recall most of the incident that occurred; this is often in conjunction with higher levels of drinking or when the student has experienced a blackout during their incident. In these cases, the provider can offer to have their direct supervisor look up information within the hospital records. This information
can be obtained during the first session while the student is taking the first segment of the assessments.

‘Good’ and ‘not-so-good’ of alcohol usage. (Institution specific language) The student is given a sheet of paper with two columns on it one for ‘good’ and the other ‘not-so-good.’ The student is encouraged to brainstorm about all of their experiences with alcohol and determine what are the things they enjoy about when they drink, the ‘good,’ and what are the things that they would rather avoid if possible, the ‘not-so-good.’ Once the student has written down their thoughts, the provider goes over this information with the student. Through this process, the provider is able to gain insight into the importance of drinking for the client as well as what alcohol-related consequences they typically experience. These alcohol-related consequences then become part of the larger discussion around what the student feels comfortable drinking and how they can avoid consequences.

Standard drinks. Providers give psychoeducation, if needed, to the student regarding standard drinks (Dimeff et al, 1999). The providers are highly encouraged to check in with the student to determine what knowledge they have about what makes up a standard drink. Often the student has received this information through the student orientation process at the university, through programming for student organizations, and/or from earlier sources (high school health class, etc.) The information presented to the student includes:

- There are 0.6 ounces of pure alcohol in each standard drink
- 1 standard drink of beer = 12 ounces that is 5% alcohol by volume
- 1 standard drink of malt liquor = 8-9 ounces that is 7% alcohol by volume
- 1 standard drink of wine = 5 ounces that is 12% alcohol by volume
- 1 standard drink of liquor = 1.5 ounces that is 80 proof or 40% alcohol by volume
- A red, solo cup has a round rim has a total volume of 16 ounces. If the rim is square the cup typically has 18-18.5 ounces.

- The lines on the solo cup are a way to estimate one standard drink of liquor, wine, or beer. They are not 100 percent accurate. The providers show the student where the exact amounts come to.

- Visuals for the standard drinks are used including gel examples and an equivalency chart. This chart shows the type of drink and the number of standard drinks it contains (example: 12 ounces of seven percent, malt liquor would contain 1.5 standard drinks).

**Computer-based assessments.** This segment of the first session begins with the provider entering contact information for the student including local address, email, and phone number. The student starts their assessment by reading a statement and agreeing to the conditions of the BASICS program. The current assessment continues by having the student complete the Patient Health Questionnaire (PHQ-9), Overall anxiety Severity and Impairment Scale (OASIS), and Alcohol Use Disorders Identification Test (AUDIT) (Hustad et al., 2014). The process continues with the provider entering information regarding the student’s incidents and checking their scores. Specifically, the provider is looking to see if the student has given a positive response for the number nine question in the PHQ-9. These questions if the screening for suicidal ideation. If the student screens positive has a 1 or higher on this question, then there is a specific procedure that is followed (described further down in this section). If the student does not screen positive, then the session continues. This includes scheduling the student for their second session and then having them complete the rest of the assessment.

**Journal sheet.** The student is given a journal sheet to track their drinking behaviors. The directions on the sheet requires them to fill out the date, time, type of alcohol,
number of standard drinks, location, whom they are with, and how they are feeling for each drink that they consume until their second session. The students are encouraged to document this in terms of standard drinks. This information is used to gain insight into their typical drinking pattern as well as providing real world examples for BAC calculation, which is discussed in the second session (Dimeff et al, 1999).

**Biphasic Response to Alcohol.** This curve represents that response that the body has to alcohol (Dimeff et al, 1999). There are two phases in the body’s response: euphoric and dysphoric. The euphoric phase includes increased mood, more talkative, and more outgoing. The dysphoric phase includes all of the depressant effects of alcohol which includes slurred speech, blurry vision, loss of coordination, coma, respiratory arrest, and death.

**Point of diminishing returns.** This is a specific point on the biphasic response to alcohol curve (Dimeff et al, 1999). The point of diminishing returns is 0.06 BAC. Up to this point, the body has a euphoric response to alcohol and following this point the drinker experiences fewer positives from their drinking (a.k.a. there are diminishing returns as an individual continues to drink).

**Personalized Normative Feedback.** The personalized normative feedback sheets (PNF) include information that the student self-reported regarding their drinking patterns on a typical day, maximum day, drinking on their event, the consumption norms for males or females on campus (based on the sex of the student), high-risk drinking is defined, the number of occasions the student participated in high-risk drinking in the past two weeks is reported, percentages for high-risk drinkers/drinkers/non-drinkers on campus are reported, the blood alcohol concentration for each of the three occasion the student disclosed is given in a chart with comparisons for legal limits, the point of diminishing returns, safety and health-related consequences (Dimeff et al.,
In relation to this page, the provider and student discuss BAC calculation, how it increases, and how it decreases. The feedback continues with costs associated with drinking (financial and caloric), family history of alcohol misuse or abuse, the student’s AUDIT score, the use of other drugs, and the impact of taking medications while drinking. The next page of the feedback includes the student’s self-reported risk behaviors, alcohol-related consequences, and the list of safer drinking strategies that are categorized by how often they are used (frequently occasionally, or rarely). The final page of the PNF lists the top five safer drinking strategies that university students reported using, a scale from one to ten of the student’s ranking of motivation to modify their drinking behaviors and their confidence in being able to make these modifications. The last part of the page includes an action plan where students fill in their goals for what they would feel comfortable consuming in the future. These goals range from making no changes to choosing to stop drinking. The goals in between are more commonly chosen and include drinking a certain number of days per week/month, typically drinking (fill-in-the-blank) drinks for occasion, keeping their BAC at or below 0.06 (the point of diminishing returns), and/or keep their BAC at (fill-in-the-blank).

**Referrals.** Referrals are made based off of the student’s assessment scores and the risk factors they self-report during their initial appointment (Dimeff et al., 2009). For example, a student would be referred if they receive a score of 15 or higher on the AUDIT, a score of 8 or higher on the PHQ-9, a score of 10 or higher on the OASIS, has an incident BAC of 0.25 or greater, has a number of high-risk drinking episodes (5 or more standard drinks for males and 4 or more standard drinks for females over 2 hours), a high number of alcohol-related consequences, and/or if the student has a family history of abuse or misuse of alcohol. Making these referral offers the student a supplement to the strict protocol of BASICS.
**Follow up appointment.** The follow up appointment includes the student returning to take a computer based assessment. This assessment includes the same questions that are asked during the student’s initial appointment (Hustad et al., 2014).

**Factors that increase BAC.** There are a number of different factors that increase an individual’s BAC (Dimeff et al., 2009). The most straightforward to think about is the number of standard drinks one consumes and the time span over which they are consumed. There are four other factors that influence the rise of BAC. One would be whether you have had a meal to eat before you begin drinking. The presence of food in the stomach allows the alcohol to be absorbed at a slower rate. The second factor would be the sex of the individual who is drinking. Males can often drink more alcohol and maintain a lower BAC. There are two reasons for this; first, males have more muscle mass and that muscle holds water which can dilute the alcohol within their system and second, males have more of specific enzyme called alcohol dehydrogenase, which can break down alcohol before it enters the bloodstream.

**Factor that decreases BAC.** There is only one thing that can reduce an individual’s BAC and that is time. The reason for this is that the individual’s liver must oxidize the toxins in the alcohol which have entered the bloodstream. Approximately 0.016 of the individual’s BAC can be removed per hour. This occurs beginning one hour after the student has stopped drinking, due to it taking one hour for a standard drink to fully absorb into his or her bloodstream (Dimeff et al., 2009).
CHAPTER THREE: METHODOLOGY

Research Design

The design of the study was a quantitative research methodology that included: descriptive statistics, correlation, and multiple regression. The research design was developed after completing a review of prior research studies to determine a suitable methodology and exploring the relationship between the variables in the research questions.

Correlational design was employed to help examine how the variables relate to each other in the context of the college environment. Lappe (2000) explains that correlation assists with describing a phenomenon in its context, giving the consumer a better understanding of the natural circumstances. Multiple researchers in the alcohol intervention have used correlation to explore the link with anxiety, depression, and alcohol consumption (Johansson, Sinadinovic, Hammarberg, Sundström, Hermansson, Andreasson, & Berman, 2016; McKay, Andretta, & Cole, 2017; Sjoerds, van den Brink, Beekman, Penninx, & Veltman, 2014). Other variables also contribute to an individual's consumption, these connections were explored in chapter two. One of the strengths of correlation is that there is a high internal validity (Creswell, 2014). A high internal validity allows researchers to assume stronger connections with other similar environments, (i.e. measurements taken at a large university in the north-east as in this study), may be conveyed to other large universities in other parts of the United States. A correlation study includes the ability to predict and examine variables and the relationships between them via observation.

This study was IRB approved. The student participants completed a computer administered survey via DatStat Illume™ which included collecting information of demographics and taking multiple questionnaires that acted as a source to gather data and an
eligibility screening (Hustad et al., 2014). All of the questionnaires had appropriate psychometric properties and will be discussed in detail in the measures segment below. The current study includes 9 variables related to college student drinking and level of dependence on alcohol. Tabachnick and Fidell (2007) recommend a specific formula for determining an appropriate and sufficient sample size to test multiple correlations, \( N \geq 50 + 8m \), where \( m \) is equal to the number of variables. The minimum number of participants for the study, \( N = 130 \), was calculated using the formula: \( N \geq 50 + 8m \), where \( m \) was equal to 10 (the sum of the dependent and independent variables).

**Participants**

Potential undergraduate participants were identified at a 4-year institution with a 40,000 student enrollment. The undergraduate students were mandated to participate in an alcohol intervention program after receiving a violation from the institution while being actively enrolled. This violation of the institution's drug policy could have resulted from arrest on or off campus, bringing alcohol into a residence hall, consuming alcohol in a residence hall, and/or being admitted to the ER for alcohol intoxication. The program was administered at an on-campus location and undergraduate participants were charged two hundred dollars to attend the program. Additional fees could be incurred by missing scheduled participation appointments.

A total of 547 students were screened for the research study. The participants that were eligible for the study included 278 students. Of those students, 33.1 percent (\( n=92 \)) identified as female and 66.9 percent (\( n=168 \)) identified as male. The participants ranged from 18-24 years of age. The largest percentages were 18 and 19 year olds at 41.5 percent and 32.0 percent respectively. The percentage lowered exponentially from there with 16.5 percent at 20 years, 6.1
percent at 21 years, 2.5 percent at 22 years, 1.1 percent at 23 years and 0.4 percent (N=1) at 24 years of age.

Ethnicity was broken down into 7 categories: Other, Native American, Hispanic, Asian, Black, Hawaiian, and White. Students were able to select as many categories as they identified with. The following one-identifier categories were identified by the undergraduate participants: Asian (5%), Black (2.2%), Hispanic (4%), Hawaiian (0.4%), Other (1.4%), and White (82%). Native American was not identified individually but rather was included in the multi-identifier groups. Black-Hispanic (0.7%), Hawaiian-Hispanic (0.4%), White-Asian (n=1, 0.4%), White-Black-Native American (n=1, 0.4%), White-Hispanic (n=5, 1.8%), White-Native American (n=2, 0.7%), White-Native American-Hawaiian (0.4%), and White-Black-Hispanic-Asian-Native American-Hawaiian- Other (0.4%). For the “Other” category participants were asked to give voice to their identity. One person (0.4%) was in each of the Other groups: “drop-dead gorgeous, Egyptian, Guyanese (South America), Pacific Islander and Caucasian, White and Asian.”

Figure 3.1: Race/Ethnicity of Student Participants
Of the undergraduate participants 10 students (3.6%) were not from main campus and 6 students (2.2%) were international students.

**Data Collection Procedures**

**Backstory.** Students who were referred to the alcohol intervention program could have one or more violations of the institutions drug policy including: underage consumption, being found in the presence of alcohol, being admitted to the emergency room at the local hospital, public drunkenness, being host to other students in one’s dormitory room while alcohol is present, driving under the influence, and supplying alcohol to students under the legal drinking age.

Students were then eligible to go into a standard intervention or two treatment program, individual or group sessions (Hustad, Mastroleo, Kong, Urwin, Zeman, LaSalle, & Borsari, 2014). The first session includes building rapport with the student, describing the process of BASICS program, talking to the student about confidentiality, as well as supervision and team support. The second session includes re-establishing rapport, touching on confidentiality, checking in to see if the student has any questions on the information that was covered last session, going over their journal sheet, discussing their personalized normative feedback (PNF) packet, making any referrals for continuing on to session 3 and 4, scheduling their follow up appointment, and having the student complete a satisfaction survey.

**Recruitment and inclusion/exclusion criteria.** The student participants were recruited over a three-month period in a fall semester after they had been mandated. The participants entered into the study following an initial screening that was done by an alcohol intervention staff member. Student participants completed a series of questions that determined their ability to participate in the research study. The questions took approximately five minutes and then a staff
member would screen the results to determine if the student was eligible. Criteria to be in the study included that students needed to be legal adults (18 years of age), enrolled at the institution, have a score or 16 or lower on the Alcohol Use Disorders Identification Test (AUDIT), and must have stated on the Patient Health Questionnaire (PHQ-9) that they had no thoughts of suicide. The parameters around eligibility include adherence to campus policy that would refer a student to other resources if they had suicidal ideation or if their score on the AUDIT was above 16, indicating that they no longer have elevated levels of alcohol misuse.

Five hundred and forty seven undergraduate students were screened in total. After the initial screening, 452 students were eligible and asked if they would like to participate. Two hundred and seventy eight (61.5%) of the students consented to participate. The remaining 38.5% did not consent to be included in the research study (Hustad et al., 2014). Data for the non-consenting student population was not accessible for this study.
Instruments/Measures

**PHQ-9 Patient Health Questionnaire.** (Spitzer, Kroenke, & Williams, 1999) is a brief depression screening which contains 10 questions which is used to determine if a student has suicidal thoughts. The instructions for the screening were: “Over the last 2 weeks, how often have you been bothered by any of the following problems?” The questions that followed included items such as: 1) Little interest or pleasure in doing things and 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 where 0= “Not at all”, 1= “Several days”, 2= “More than half the days”, 3= “Nearly every day”. Question 10 was scored on a Likert scale where 0= “Not difficulty at all”, 1= “Somewhat difficult”, 2= “Very difficult”, and 3= “Extremely difficult”. All scores from the questions were summed, the intervention program made referrals when a student had a score of 10 or more. PHQ-9 had a reliability of $\alpha = 0.7757$, for the total scale (J. Hustad, personal communication, December 11, 2013).

<table>
<thead>
<tr>
<th>Total Score</th>
<th>Depression Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>Minimal depression</td>
</tr>
<tr>
<td>5-9</td>
<td>Mild depression</td>
</tr>
<tr>
<td>10-14</td>
<td>Moderate depression</td>
</tr>
<tr>
<td>15-19</td>
<td>Moderately severe depression</td>
</tr>
<tr>
<td>20-27</td>
<td>Severe depression</td>
</tr>
</tbody>
</table>
AUDIT. The Alcohol Use Disorders Identification Test. (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) is used to screen for students with alcohol problems. This instrument is broadly used in the addictions research community to look for hazardous alcohol use due to its brief nature, 10 questions. All questions were scored on Likert scales. Questions included items such as: “How many drinks containing alcohol do you have on a typical day when you are drinking?” and “How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?” Scores below 16 are an indicator of low-to-hazardous use. Scores of 16 or higher are representative of an individual who has high to very high alcohol use and may be alcohol dependent (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Saunders et al., 1993). The intervention program referred students who had a score of 16 or more (due to a high likelihood of consequences within the next 6 months). A total score of 20 or more often indicates alcohol dependence. The AUDIT had a reliability of $\alpha = 0.5704$, for the total scale (J. Hustad, personal communication, December 11, 2013).

<table>
<thead>
<tr>
<th>Questions</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>Alcohol consumption</td>
</tr>
<tr>
<td>4-6</td>
<td>Alcohol dependence</td>
</tr>
<tr>
<td>7-10</td>
<td>Alcohol-related problems</td>
</tr>
</tbody>
</table>

OASIS Overall Anxiety Severity and Impairment Scale. (Norman, Cissell, Means-Christensen, & Stein, 2006) is a brief anxiety screening. The screening included 5 items that
were scored on a Likert scales. Questions included items such as: “In the past week, how often have you felt anxious?” and “In the past week, how often did you avoid situations, places, objects or activities because of anxiety or fear?” The intervention program made referrals when a student had a score of 8 or more. The OASIS had a reliability of $\alpha = 0.8445$, for the total scale (J. Hustad, personal communication, December 11, 2013).

**DRSEQ-RA Drinking Refusal Self-Efficacy Questionnaire-Revised Adolescent Version.** (Young, Hasking, Oei, & Loveday, 2007) is used to screen for alcohol related confidence based on three factors: social pressure refusal self-efficacy, emotional relief self-efficacy, and opportunistic refusal self-efficacy. There was a total of 19 questions scored on a Likert scale. The instructions for the measure asked for the participants to “describe their ability to have drinking situations.” Sample prompts included: “When I am on the way home from school” and “When my boy/girlfriend is drinking.” The DRSEQ-RA had a reliability of $\alpha = 0.9032$, for the total scale (J. Hustad, personal communication, December 11, 2013). Reliability for the DRSEQ_RA subscales include social pressure refusal subscale $\alpha = 0.87$, emotional relief subscale $\alpha = 0.90$, and opportunistic refusal subscale $\alpha = 0.90$ (Young, Hasking, Oei, & Loveday, 2007 p. 886).

<table>
<thead>
<tr>
<th>Questions</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,6,9,12,15</td>
<td>Social pressure refusal self-efficacy</td>
</tr>
<tr>
<td>2,7,10,13,16,18,19</td>
<td>Emotional relief self-efficacy</td>
</tr>
<tr>
<td>1,3,5,8,11,14,17</td>
<td>Opportunistic refusal self-efficacy</td>
</tr>
</tbody>
</table>
**SURP.** The Substance Use Risk Profile Scale (Woicik, Stewart, Pihl, & Conrod, 2009) is used to measure four personality dimensions (hopelessness, anxiety sensitivity, impulsivity, and sensation seeking) in relation to patterns of substance use. The 23 items were scored using a Likert scale, with questions such as: “I often involve myself in situations that I later regret being involved in” and “I would like to learn how to drive a motorcycle.” The SURP had a reliability of $\alpha = 0.6979$, for the total scale (J. Hustad, personal communication, December 11, 2013). The SURP subscales were found to be reliable and valid in Woicik, Stewart, Pihl, and Conrod’s 2009 research. The hopelessness subscale had 7 items, reliability = 0.8, the impulsiveness subscale had 5 items, reliability = 0.7, and the sensation seeking subscale had 6 items, reliability = 0.7 (Woicik, Stewart, Pihl, & Conrod, 2009). Items 1, 4, 7, 13, 20 and 23 require an inversion of respondent's score.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Personality Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,4,7,13,17,20,23</td>
<td>Hopelessness</td>
</tr>
<tr>
<td>2,5,11,15,22</td>
<td>Impulsiveness</td>
</tr>
<tr>
<td>3,6,9,12,16,19</td>
<td>Sensation seeking</td>
</tr>
</tbody>
</table>

**Variables**

**Independent Variables (IV)**

**Anxiety.** A student’s level of anxiety was measured by their score on the OASIS. This measure is self-reported and guides the student to think back to their past week as a context for the five questions asked. “Higher scores indicated greater anxiety-related severity and
impairment” (Norman et al., 2006, p.246). The scores from the OASIS were included on all, three research questions.

**Depression.** This variable measured a student’s level of depression via the PHQ-9. This measure is self-reported and asks the student to think back to their past two weeks for context on the first nine questions of the ten total questions. As depicted earlier in this chapter the score range from low (1-4) indicating minimal depression to high (20-27) indicating severe depression. Scores from the PHQ-9 were included on all research questions.

**Family history.** This variable was measured by six questions that asked the student participant “Do you think you [specific category of biological family members; i.e. mother, father, sibling, cousin, etc.] is/was a problem drinker?” There were six questions in total and all data was self-reported. This variable was included on one research question.

**Other drug use.** This variable was measured by Likert scale where 0 = “Never used”, 1 = “Have used, but not in the last 30 days”, 2 = “1-2 days”, 3 = “3-5 days”, 4 = “6-9 days”, 5 = “1-19 days”, 6 = “20-29 days”, and 7 = “Used daily.” Instructions for the 18 questions were “Within the last 30 days, on how many days did you use: [drug type.]” Questions included the types of drugs including examples such as “Cigarettes”, “Inhalants (glue, solvents, gas)”, and MDMA (Ecstasy).” All data were gathered via self-report. This variable was included on one research question.

**Number of Consequences.** This variable was measured by 52 questions that were self-reported data. The instructions asked the student participant whether they had participated in behavior during the past 30 days. Questions included statements such as:

“Because of my drinking, I have not slept properly.”

“I often have ended up drinking on nights when I had planned not to drink.”
“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.”

This variable was included on one research question.

**Self-efficacy.** A student’s level of self-efficacy was measured by their score on the DRSEQ-RA. This measure is self-reported and asks the student to describe their ‘ability to handle drinking situations.’ The questions are divided into three subscales (social pressure refusal self-efficacy, emotional relief self-efficacy, and opportunistic refusal self-efficacy) where higher scores indicated confidence in ability to resist drinking. The scores from the DRSEQ-RA were included on two research questions.

**Hopelessness.** This variable is a subscale of the SURP that included 7 questions. Instructions for the measure stated: ‘Please indicate how much you agree with each of the following statements using the following scale: 1-strongly disagree, 2-disagree, 3-agree, 4-strongly agree.’ The lower the score the more intense a student’s feelings of hopelessness were.

**Impulsiveness.** This variable is a subscale of the SURP that included 5 questions. Instructions for the measure stated: ‘Please indicate how much you agree with each of the following statements using the following scale: 1-strongly disagree, 2-disagree, 3-agree, 4-strongly agree.’ The higher the score the more intense a student’s impulsivity was. This variable was included on one research question.

**Sensation seeking.** This variable is a subscale of the SURP that included 6 questions. Higher the scores the more likely a student was to be sensation seeking. This variable was included in one research question.

**Dependent Variable (DV)**
**Level of dependence on alcohol.** This variable was described early in the *Measures* portion of this chapter. This variable was used in all three research questions.

**Moderator**

**Gender.** During the data analysis, the gender variable was added into each research question. The responses that were male and female. The number of total respondents on gender were 156 versus the total respondents for the nine IVs and one DVs were 277.

**Data Analysis**

Data were analyzed using Statistical Package for the Social Sciences (SPSS) software, version 23.0, including descriptive and inferential statistics for the correlations and multiple regression. Regression analysis relies on the assumptions of normality, linearity, homoscedasticity, independence, and normal distribution of residuals (Tabachnick & Fidell, 2007). The sample size was sufficient for the hierarchical multiple regression at 278 student participants. When the data were reviewed, there was one missing value bringing the total number of students analyzed down to 277. When a moderator was added the number of students analyzed went down to 156, which is still a sufficient sample size (130 minimum needed as discussed earlier in this chapter). The data set were reviewed to examine accuracy, distributions, outliers, and missing values. The data was analyzed using univariate, bivariate, and multivariate statistics as recommended by Creswell (2014).

Frequencies were run on the following variables: anxiety (OASIS), depression (PHQ-9), family history, other drug use, number of consequences, AUDIT, self-efficacy (DRSE), hopelessness (subscale in SURP with inversions), impulsivity (subscale in SURP), sensation seeking (subscale in SURP), gender (moderator). The frequency variables that were run included
N (valid), N (missing), mean, median, standard deviation, skewness, standard error of skewness, kurtosis, standard error of kurtosis, minimum, and maximum. Frequency tables were also run.

Three research questions examined variables that could relate to the level of dependence. Research questions and analytic plans are below:

**RQ1 and RQ1 with Moderator**

*RQ1*-Does a student's' anxiety (OASIS) and depression (PHQ-9), family history, other drug use, and number of consequences predict level of dependence (AUDIT)?

A linear regression was completed with the five IVs and one DV. Prior to the regression analysis I used SPSS to run the basic descriptive statistics and completed exploratory data analysis which included model fit checks to assess linearity, basic descriptive information available from the SPSS Explore program, partial correlation, skewness, and box plots including histograms. The option was chosen to exclude cases listwise, which removes an individual case that has any variable missing data when running the regression.

Next an ANOVA was used to assess whether a significant amount of the difference existed in the AUDIT values. A block regression was then run to answer research question 1. Finally, gender (male/female) was added to the regression model as a moderator to further explore the predictive value of gender (male or female) on anxiety, depression, family history, other drug use, and number of consequences on level of dependence on alcohol.

**RQ2 and RQ2 with Moderator**

*RQ2*-What is the influence of anxiety (OASIS), depression (PHQ-9), and self-efficacy (DRSE) on level of dependence (AUDIT)?

A linear regression was completed with the three IVs and one DV. Prior to the regression analysis, SPSS was used to run the basic descriptive statistics and completed exploratory data
analysis which included model fit checks to assess linearity, basic descriptive information available from the SPSS Explore program, partial correlation, skewness, and box plots including histograms. The option was chosen to exclude cases listwise, which removes an individual case that has any variable missing data when running the regression.

Next an ANOVA was used to assess whether a significant amount of the difference existed in the AUDIT values. A block regression was then run to answer research question 1. Finally, gender (male/female) was added to the regression model as a moderator to further explore the predictive value of gender (male or female) on anxiety, depression, family history, other drug use, and number of consequences on level of dependence on alcohol.

**RQ3 and RQ3 with Moderator**

*RQ3* - Does anxiety (OASIS), depression (PHQ-9), hopelessness (SURP subscale), impulsive behavior (SURP subscale), sensation seeking (SURP subscale), and self-efficacy (DRSE) predict level of dependence (AUDIT)?

A linear regression was completed with the six IVs and one DV. Prior to the regression analysis, SPSS was used to run the basic descriptive statistics and completed exploratory data analysis which included model fit checks to assess linearity, basic descriptive information available from the SPSS Explore program, partial correlation, skewness, and box plots including histograms. The option was chosen to exclude cases listwise, which removes an individual case that has any variable missing data when running the regression.

Next an ANOVA was used to assess whether a significant amount of the difference existed in the AUDIT values. A block regression was then run to answer research question 1. Finally, gender (male/female) was added to the regression model as a moderator to further
explore the predictive value of gender (male or female) on anxiety, depression, family history, other drug use, and number of consequences on level of dependence on alcohol.
CHAPTER FOUR: RESULTS

In this chapter, the results of the analysis for my three research questions are summarized. This chapter includes information from the preliminary data analysis; univariate analyses including statistical summaries of the individual variables used in the subsequent analyses, bivariate correlative analyses, and the results of the hierarchical or block regression analyses.

Preliminary Data Analysis

Data Cleaning

The data for this study were collected between the 2010 to 2012 academic years by staff members of the BASICS program at a 4-year institution with a 40,000+ undergraduate student enrollment. The student participants in the dataset (N = 278) were undergraduate students between 18 and 24 years of age. One participant was removed due to a lack of self-reported data on all the relevant variables for the current study data analysis (N=277). This decision was made after examining the frequencies for the full dataset, as is common practice (Pallant, 2007). In the preliminary analysis, the high and low values, skewness and kurtosis values and quartile values for each interval scale of measurement variable were examined using the SPSS Explore program.

Missing data. Graham (2012) suggests that missing values can fall into three categories: missing completely at random, missing at random, and not missing at random. The results of the SPSS missing value analysis (MVA) procedure revealed only one case with missing data for all the study variables, and that case was removed. Family history of alcohol use was the single variable with substantial missing data (12.9% missing data). Thus the analyses which included this variable have a smaller number of cases (N=242); whereas, analyses that do not include the family history of alcohol use have a larger number of cases (N=277).
Outliers. Box plots generated from the Explore program in SPSS revealed no issues due to major outliers for the interval scale of measurement variables with the exception of the Self Efficacy variable. The self-efficacy variable had one major outlier (participant #155). Tabachnick and Fidell (2007) suggest two ways of correcting outliers: changing the value to a less extreme number so that all participants can be included or completely removing the value from the dataset. It is common for outliers to occur and considering the very limited number of variables with outliers, I decided to include the outlier in the dataset. Sundram (2003) supports this view in discussing that a lack of participant responses can result in a violation of the sample.

Profile of the Study Participants

This section provides a brief profile of the study participants. Table 4.1 includes information related to demographic and collegiate background information. The data revealed the participants were predominately males (66.9%). Approximately 73% of participants were 18 or 19 years of age and 74% were either freshmen or sophomores. Information regarding their housing status revealed about 65% resided in on campus residence halls and about 28% lived in an off campus house/apartment. Figure 4.1 summarizes information regarding race/ethnicity.

![Figure 4.1: Race/Ethnicity of Student Participants](image-url)
Table 4.1: Profile of study participants for selected variables. (N = 278)

<table>
<thead>
<tr>
<th>Characteristic/Variable</th>
<th>Number</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>180</td>
<td>66.9</td>
</tr>
<tr>
<td>Female</td>
<td>92</td>
<td>33.1</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Years</td>
<td>115</td>
<td>41.4</td>
</tr>
<tr>
<td>19 Years</td>
<td>89</td>
<td>32.0</td>
</tr>
<tr>
<td>20 Years</td>
<td>46</td>
<td>16.5</td>
</tr>
<tr>
<td>21 Years</td>
<td>17</td>
<td>6.1</td>
</tr>
<tr>
<td>22 – 24 Years</td>
<td>11</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Current Year in College</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>145</td>
<td>52.2</td>
</tr>
<tr>
<td>Sophomore</td>
<td>61</td>
<td>21.9</td>
</tr>
<tr>
<td>Junior</td>
<td>48</td>
<td>17.3</td>
</tr>
<tr>
<td>Senior</td>
<td>24</td>
<td>8.6</td>
</tr>
<tr>
<td><strong>Enrollment on Main Campus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>3.6</td>
</tr>
<tr>
<td>No</td>
<td>268</td>
<td>96.4</td>
</tr>
<tr>
<td><strong>International Student</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>272</td>
<td>97.8</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Current Residence (Housing) Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off Campus House/Apartment</td>
<td>79</td>
<td>28.4</td>
</tr>
<tr>
<td>Home with Parent/Guardian</td>
<td>2</td>
<td>.7</td>
</tr>
<tr>
<td>On Campus residence Hall</td>
<td>180</td>
<td>64.7</td>
</tr>
<tr>
<td>Fraternity House</td>
<td>9</td>
<td>3.2</td>
</tr>
<tr>
<td>Sorority Floor</td>
<td>4</td>
<td>1.4</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Current Greek Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>224</td>
<td>80.6</td>
</tr>
<tr>
<td>Active member</td>
<td>29</td>
<td>10.4</td>
</tr>
<tr>
<td>Pledge</td>
<td>25</td>
<td>9.0</td>
</tr>
<tr>
<td><strong>Currently Play College Athletics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>256</td>
<td>92.1</td>
</tr>
<tr>
<td>Yes</td>
<td>22</td>
<td>7.9</td>
</tr>
</tbody>
</table>
Descriptive Univariate Analysis of Study Variables

The data used for the analysis (N=277) were analyzed to provide basic descriptive statistics for each of the study variables. Table 4.2 provides a summary of the study variables. The variables in Table 4.2 were treated as interval scale of measurement variables. The variables have scores/values that are obtained by summatung responses across items that have Likert type response scales. There were three variables (Family History, Other Drug Use and Number of Consequences) which represent a number count reflecting behaviors.

For each of the variables measures of central tendency and variability are reported. Because several of the variables have somewhat high skewness values (Self Efficacy), the median and IQR (interquartile range) is reported for the variables. Ghasemi and Zahediasl (2012) discuss the importance of the checking for normality to ensure validity of parametric tests. They discuss that statistical errors are common in scientific literature and that “normality and other assumptions should be taken seriously, for when these assumptions do not hold, it is impossible to draw accurate and reliable conclusions about reality” (Ghasemi & Zahediasl, 2012, p.486). Variables are homoscedastic when they meet a normal assumption (Tabachnick & Fiddell, 2007). The variables in this study met the assumptions for normality, linearity, and homoscedasticity, with the exception of Family History.
Table 4.2: Summary descriptive statistics for interval scale of measurement variables.

<table>
<thead>
<tr>
<th>Variable (possible values)</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Median/IQR</th>
<th>Actual Low Value</th>
<th>Actual High Value</th>
<th>Skew Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit Score (0 – 40)</td>
<td>278</td>
<td>.796</td>
<td>.363</td>
<td>.800/.600</td>
<td>0.000</td>
<td>1.500</td>
<td>-.084</td>
</tr>
<tr>
<td>Anxiety (0 – 20)</td>
<td>278</td>
<td>.591</td>
<td>.550</td>
<td>.400/.600</td>
<td>0.000</td>
<td>2.600</td>
<td>1.347</td>
</tr>
<tr>
<td>Depression (0 – 27)</td>
<td>278</td>
<td>.331</td>
<td>.258</td>
<td>.300/1.000</td>
<td>0.000</td>
<td>1.900</td>
<td>2.380</td>
</tr>
<tr>
<td>Family History (0 – 6)</td>
<td>242</td>
<td>.769</td>
<td>1.179</td>
<td>0.000/1.000</td>
<td>0.000</td>
<td>6.000</td>
<td>1.745</td>
</tr>
<tr>
<td>Other Drug Use (0 – 18)</td>
<td>277</td>
<td>.225</td>
<td>.247</td>
<td>.111/.330</td>
<td>0.000</td>
<td>1.000</td>
<td>1.222</td>
</tr>
<tr>
<td>Number of Consequences (0 – 48)</td>
<td>278</td>
<td>.123</td>
<td>.108</td>
<td>.104/.150</td>
<td>0.000</td>
<td>.480</td>
<td>1.029</td>
</tr>
<tr>
<td>Self-Efficacy (0 – 114)</td>
<td>277</td>
<td>5.464</td>
<td>.583</td>
<td>5.579/.580</td>
<td>1.000</td>
<td>6.000</td>
<td>-2.811</td>
</tr>
<tr>
<td>Hopelessness (0 – 28)</td>
<td>277</td>
<td>1.530</td>
<td>.461</td>
<td>1.429/.600</td>
<td>1.000</td>
<td>3.570</td>
<td>.936</td>
</tr>
<tr>
<td>Impulsivity (0 – 20)</td>
<td>277</td>
<td>.025</td>
<td>.420</td>
<td>2.000/.600</td>
<td>1.000</td>
<td>3.600</td>
<td>.124</td>
</tr>
<tr>
<td>Sensation Seeking (0 – 24)</td>
<td>277</td>
<td>2.793</td>
<td>.562</td>
<td>2.833/.750</td>
<td>1.000</td>
<td>4.000</td>
<td>-.278</td>
</tr>
</tbody>
</table>

Note: For items used to create summated Likert response scale values/scores, the response scale for each item appears in Chapter 3.
Bivariate Correlational Analysis

The zero order bivariate correlations were calculated to determine the relationships between the variables. SPSS was used to calculate Pearson correlations and, when appropriate, point biserial correlations with corresponding one-tailed significance. One tail significance tests were reported since multiple regression analysis calculates one-tail significance values.

Audit score serves as the primary dependent variable in answering the following three research study questions.

1. Does a student’s anxiety (OASIS) and depression (PHQ-9), family history, other drug use, and number of consequences predict level of dependence (AUDIT)?
2. What is the influence of anxiety (OASIS), depression (PHQ-9), and self-efficacy (DRSE) on level of dependence (AUDIT)?
3. Does anxiety (OASIS), depression (PHQ-9), hopelessness (SURP subscale), impulsive behavior (SURP subscale), sensation seeking (SURP subscale), and self-efficacy (DRSE) predict level of dependence (AUDIT)?

The highest correlation (Table 4.3) with AUDIT score was number of consequences (r = .534, p = <.001). This represented a positive, moderately high correlation. Audit scores/levels reflect a person’s self-reported information which assesses alcohol consumption, dependence and alcohol related problems. The second highest correlation with AUDIT score was the variable Other Drug Use (r = .329, p = <.001). This represented a positive, moderately low correlation. There was a negative, low correlation between Gender and AUDIT score (point biserial r = -
Because of the dummy coding for the variable Gender, a point biserial correlation indicates males had a tendency to have higher AUDIT scores as compared to females. 

Self-efficacy revealed a moderately low correlation with AUDIT scores ($r = -.232$, $p = .001$). The lower the self-efficacy score the higher the AUDIT value. Family History ($r = .103$), Impulsivity ($r = -.144$, $p = .008$) had a very low correlation with AUDIT score. The variables Anxiety, Depression Hopelessness and Sensation Seeking were not significantly correlated with AUDIT scores when examined in a bivariate analysis.

Examination of the relationships of the two mental health dimensions (Anxiety and Depression), showed significant relationships with Number of Consequences and Gender. Anxiety had a moderate, positive correlation to Number of Consequences ($r = .534$) and Gender ($r = .217$), all significant at $p < .001$. Significant bivariate correlations were observed between Depression and Number of Consequences ($r = .161$, $p = .004$), Hopelessness ($r = .359$, $p < .001$), and Gender ($r = .108$, $p = .037$).

Family History had a low, positive correlation with Other Drug Use ($r = .178$, $p = .003$). Family History was not significantly correlated with any other variables. Other Drug Use had a negative, moderate correlation to Gender ($r = -.335$, $p < .001$).

While the personality dimensions (Self-Efficacy, Hopelessness, Impulsivity, and Sensation Seeking) had interactions with other variables, they also had interesting relations among themselves. Hopelessness had a positive, low correlation to Impulsivity ($r = .255$, $p < .001$) and negative, weak correlation to Sensation Seeking ($r = -.218$, $p = .003$). Sensation Seeking had a negative weak, correlation to Gender ($r = -.234$, $p < .001$).
Table 4.3: Zero order bivariate correlations for study variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
<th>X7</th>
<th>X8</th>
<th>X9</th>
<th>X10</th>
<th>X11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit (X1)</td>
<td>278</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (X2)</td>
<td>278</td>
<td>.073</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (X3)</td>
<td>278</td>
<td>.068</td>
<td>.566</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family History (X4)</td>
<td>242</td>
<td>.103</td>
<td>.025</td>
<td>.055</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Drug Use (X5)</td>
<td>277</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Consequences (X6)</td>
<td>278</td>
<td>.534</td>
<td>.243</td>
<td>.161</td>
<td>.106</td>
<td>-.193</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy (X7)</td>
<td>277</td>
<td>-.223</td>
<td>-.149</td>
<td>-.148</td>
<td>-.054</td>
<td>-.175</td>
<td>-.248</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hopelessness (X8)</td>
<td>277</td>
<td>-.007</td>
<td>.393</td>
<td>.359</td>
<td>-.007</td>
<td>-.057</td>
<td>.130</td>
<td>-.346</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity (X9)</td>
<td>277</td>
<td>-.144</td>
<td>.151</td>
<td>.119</td>
<td>.025</td>
<td>.235</td>
<td>.186</td>
<td>-.104</td>
<td>.255</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation Seeking (X10)</td>
<td>277</td>
<td>.087</td>
<td>.074</td>
<td>.076</td>
<td>.085</td>
<td>.035</td>
<td>.314</td>
<td>.053</td>
<td>.113</td>
<td>-.196</td>
<td>.258</td>
<td></td>
</tr>
<tr>
<td>Gender (X11) (0 = M, 1 = F)</td>
<td>278</td>
<td>-.232</td>
<td>.217</td>
<td>.108</td>
<td>.065</td>
<td>-.342</td>
<td>.082</td>
<td>.094</td>
<td>.059</td>
<td>-.035</td>
<td>-.234</td>
<td></td>
</tr>
</tbody>
</table>

Note: Significance values (2nd value in each cell) represent one tail statistical significance tests.
Multiple Regression Analysis Procedures Used

Data for the three research questions were examined by completing three multiple regressions analyses. The regression analyses were completed in the following sequence. First a fully saturated model including selected predictor (explanatory) variables were regressed on the dependent variable AUDIT score. Second the moderator variable (Gender) was added to the model. Third a reduced (most parsimonious) final regression model was identified.

Prior to completing the regression analyses the researcher checked the data to determine if statistical assumptions related to the use of multiple regression were satisfactorily met with the data (Tabachnick & Fidell, 2007; Field & Miles, 2010). Specifically linearity and acceptable normality in the predictor variables were examined with boxplots, histograms and curve estimation plots available in SPSS. The scatterplots revealed no abnormal departures from linearity between each predictor variable and the dependent variable (AUDIT score). The researcher was slightly concerned with several fairly large skewness values (Self-Efficacy and Depression). To check for the impact of those cases contributing to the relatively large skewness values for those variables, it was decided to use Cook’s D to assess the impact of each case on the regression results. Cook’s D values were all within an acceptable range <1.00 for the sample size used in the analysis. The range of Cook’s D values was 0.000 to .107 (Mean = .003) which is well below 1.00.

The regression analyses were completed so that the impact of the following variables could be determined: 1) dependent variable (AUDIT score); 2) mental health dimensions (Anxiety and Depression); 3) a one variable dimension (Family History); 4) two use indicator
variables (Other Drug Use and Number of Consequences); 5) personality dimensions (Self-Efficacy, Hopelessness, Impulsivity, Sensation Seeking); and 6) a moderator variable (Gender).

The use of block regression was used to address the three research questions. The following procedure was followed.

1. As discussed in the univariate analysis, I used SPSS to run the basic descriptive statistics, completed model fit checks to assess linearity, examined partial correlations, skewness, and created box plots including histograms.

2. While analyzing the data, the option was chosen to exclude cases listwise. This removes an individual case, from the analysis if data is missing for any variable included in that specific regression analysis.

3. A linear, block regression was completed with the various IVs and one DV for each research question.

4. Finally, gender (male/female) was added to the regression model to explore the predictive value of a moderator variable on anxiety, depression, family history, other drug use, and number of consequences on level of dependence on alcohol for research question one. For Research questions two and the appropriate IVS were included.

5. The interpretation of the regression results followed the following sequence. First the ANOVA for the regression model was examined to determine if the regression was significant at $p \leq .05$. Second I checked for potential multicollinearity by examining the Tolerance and VIF values. VIF values were all well below 10 and the tolerance statistics were all above .2. All of the models’
average VIF values were not substantially greater than 1. Therefore it was determined multicollinearity was not a problem.

6. Examining the residuals was the final step of the regression analysis. Residuals are indicators of the differences between observed and predicted values, according to Pallant (2007), they can also confirm normality, linearity, and homoscedasticity assumptions. One can examine these residuals using normal probability (P-P) plot of regression standardized residuals, which shows the line of points that will, hopefully, fall along a mostly straight line on the chart. This line should go from bottom left to top right. If this line is in fact mostly straight, then one can read the chart to mean that there are no major deviations from normality. Points for the dependent variable, level of dependence (AUDIT score) followed the straight diagonal line, as previously described, with only minor divergences. These divergences became slightly more pronounced when the moderator variable, gender, was included with each of the research questions.

Pallant (2007) states that for the scatterplot of the standardized residuals, residuals should have most scores around the zero point and be rectangular in shape. In viewing the histograms, all the variable showed an approximate normal distribution with minimal residuals near the distribution.

The analysis of residuals utilized residual plots, partial regression scatterplots, and histograms to examine deviations from the assumptions of the model. Following the completion of residual analysis for the dependent variable, level of dependence (AUDIT score), very slight variations were seen. This leads me to state that the regression models fit the data and the data set meets the assumptions of the models. (See Appendix A for an
example of the residual analysis). Graphical summaries of the gender moderator appear in Appendix B.

**Influence of Selected Mental Health, Family History and Behavioral Indicator Variables on AUDIT Scores-RQ1**

**Research Question 1.** Does a student’s anxiety (OASIS) and depression (PHQ-9), family history, other drug use, and number of consequences predict level of dependence (AUDIT) and are the results moderated by the variable gender?

Table 4.4 summarizes the correlations between the six predictor variables with AUDIT scores. The two strongest bivariate correlations with AUDIT scores were for the variables Number of Consequences (r = .534) and Other Drug Use (r = .329).

Table 4.4: Zero order bivariate correlations for variables used in first multiple regression.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
<th>X7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit (X1)</td>
<td>278</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (X2)</td>
<td>278</td>
<td>.073</td>
<td>.113</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (X3)</td>
<td>278</td>
<td>.068</td>
<td>.130</td>
<td>.566</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family History (X4)</td>
<td>242</td>
<td>.103</td>
<td>.043</td>
<td>.025</td>
<td>.055</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Drug Use (X5)</td>
<td>277</td>
<td>.329</td>
<td>&lt;.001</td>
<td>-.059</td>
<td>-.041</td>
<td>.178</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Number of Consequences (X6)</td>
<td>278</td>
<td>.534</td>
<td>&lt;.001</td>
<td>.243</td>
<td>.161</td>
<td>.106</td>
<td>-.193</td>
<td>1.000</td>
</tr>
<tr>
<td>Gender (X7) (0 = M, 1 = F)</td>
<td>278</td>
<td>-.232</td>
<td>&lt;.001</td>
<td>.217</td>
<td>.108</td>
<td>.065</td>
<td>-.342</td>
<td>.082</td>
</tr>
</tbody>
</table>

Note: Significance values (2nd value in each cell) represent one tail statistical significance tests.

Table 4.5 below summarizes the effects of anxiety, depression, family history, other drug use, and number of consequences on level of dependence. The multiple regression revealed that
in the saturated model without the moderator variable gender, as well as anxiety, other drug use, and number of consequences contributed significantly to the regression model, F (5, 271) = 27.664, p < .001 and accounted for 33.8% of the initial variation in the AUDIT score. The standardized beta coefficients showed that number of consequences and other drug use had a moderate, positive effect on AUDIT score (Beta = .495, p < .001 and Beta = .230, p < .001 respectively).

Table 4.5: AUDIT Score Regressed Mental Health, Family History, and Behavioral Indicators.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Saturated Model Without Moderator</th>
<th>Saturated Model with Moderator</th>
<th>Reduced Model with Moderator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>p</td>
<td>Beta</td>
</tr>
<tr>
<td>Anxiety Score</td>
<td>-.053</td>
<td>.387</td>
<td>-.010</td>
</tr>
<tr>
<td>Depression Score</td>
<td>.028</td>
<td>.639</td>
<td>.020</td>
</tr>
<tr>
<td>Family History</td>
<td>.009</td>
<td>.864</td>
<td>.047</td>
</tr>
<tr>
<td>Other Drug Use</td>
<td>.230</td>
<td>&lt;.001</td>
<td>.140</td>
</tr>
<tr>
<td>Number of Consequences</td>
<td>.495</td>
<td>&lt;.001</td>
<td>.517</td>
</tr>
<tr>
<td>Gender (0 = M; 1=F)</td>
<td></td>
<td></td>
<td>-.234</td>
</tr>
<tr>
<td>Model Summary</td>
<td>F</td>
<td>df</td>
<td>p</td>
</tr>
<tr>
<td></td>
<td>27.664</td>
<td>5/271</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>27.848</td>
<td>6/270</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>69.331</td>
<td>2/274</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

The table above details the effects of anxiety, depression, family history, other drug use, and number of consequences on level of dependence in relation to a moderator, gender. The regression with the moderator revealed that in the saturated model other drug use, number of consequences and gender contributed significantly to the regression model, F (6, 270) = 27.848, p < .001 and accounted for 38.2% of the variation in the AUDIT score. The standardized beta coefficients showed that number of consequences had a moderate, positive effect on AUDIT
score (Beta = .517, p < .001), other drug use had a low effect (Beta = .140) and gender had moderate, negative effects on AUDIT scores (Beta = -.234, p < .001).

In the final reduced model the number of consequences variable (Beta = .520) had approximately twice the influence as compared to the variable gender (Beta = -.226). Other drug use (Beta = .151) had a much smaller effect than the other two variables on AUDIT scores. Those three variables accounted for 33.6% of the variance in AUDIT scores.

Influence of Mental Health and Self-Efficacy Variables on AUDIT Scores-RQ2

Research Question 2. What is the influence of anxiety (OASIS), depression (PHQ-9), and self-efficacy (DRSE) on level of dependence (AUDIT) and are the results moderated by gender of the student?

Table 4.6 summarizes the bivariate relationships between the four predictor variables and the AUDIT score used in answering the second research question. Self-efficacy (r = -.223, p < .001) and gender (point biserial = -232, p < .001) were the variables significantly associated with AUDIT score.

Table 4.6: Zero order bivariate correlations for four predictor variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit (X1)</td>
<td>278</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (X2)</td>
<td>278</td>
<td>.073</td>
<td>.113</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (X3)</td>
<td>278</td>
<td>.068</td>
<td>.130</td>
<td>.566</td>
<td>&lt;.001</td>
<td>1.000</td>
</tr>
<tr>
<td>Self-Efficacy (X4)</td>
<td>277</td>
<td>-.223</td>
<td>&lt;.001</td>
<td>-.149</td>
<td>-.148</td>
<td>-.054</td>
</tr>
<tr>
<td>Gender (X5)</td>
<td>278</td>
<td>-.232</td>
<td>&lt;.001</td>
<td>.217</td>
<td>.108</td>
<td>.094</td>
</tr>
</tbody>
</table>

Note: Significance values (2nd value in each cell) represent one tail statistical significance test
Table 4.7 summarizes the effects of anxiety, depression, and self-efficacy on level of dependence on alcohol. The multiple regression revealed that in the saturated model without the moderating variable gender, Self-Efficacy contributed significantly to the regression model, $F (3, 273) = 4.911, p = .002$ and accounted for 5.1% of the initial variation in the AUDIT score.

The table above also summarizes the effects of anxiety, depression, and self-efficacy on level of dependence in relation to a moderator, gender. The regression with moderator revealed that in the saturated model gender contributed significantly to the regression model, $F = 7.929, p < .001$ and accounted for 10.4% of the variation in the AUDIT score. The standardized beta coefficients showed that gender had a moderately low, negative effect on AUDIT score (Beta = -.234, p < .001). Self-efficacy was had a relatively low, negative influence on AUDIT score (Beta = -.185).

Table 4.7: AUDIT Score Regressed on Mental Health and Self-Efficacy Variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Saturated Model Without Moderator</th>
<th>Saturated Model with Moderator</th>
<th>Reduced Model with Moderator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>p</td>
<td>Beta</td>
</tr>
<tr>
<td>Anxiety Score</td>
<td>.022</td>
<td>.763</td>
<td>.079</td>
</tr>
<tr>
<td>Depression Score</td>
<td>.025</td>
<td>.729</td>
<td>.023</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>-.216</td>
<td>&lt;.001</td>
<td>-.185</td>
</tr>
<tr>
<td>Gender (0=M; 1=F)</td>
<td></td>
<td></td>
<td>-.234</td>
</tr>
<tr>
<td>Model Summary</td>
<td>F</td>
<td>df</td>
<td>p</td>
</tr>
<tr>
<td></td>
<td>4.911</td>
<td>3/273</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>7.929</td>
<td>4/272</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>14.605</td>
<td>2/274</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>R Square</td>
<td>.051</td>
<td>.104</td>
</tr>
<tr>
<td></td>
<td>Adjusted R Square</td>
<td>.096</td>
<td>.090</td>
</tr>
</tbody>
</table>
Influence of Selected Mental Health and Personality Dimension Variables on AUDIT Scores-RQ3

Research Question 3. Does anxiety (OASIS), depression (PHQ-9), hopelessness (SURP subscale), impulsive behavior (SURP subscale), sensation seeking (SURP subscale), and self-efficacy (DRSE) predict level of dependence (AUDIT) and are the results moderated by student gender?

The bivariate correlations for the variables used in this analysis appear in Table 4.8. Self-efficacy (r = -.223) and student gender (r = -.232) both have a moderately low negative correlation with AUDIT score. Impulsivity (r = -.144) has a relatively low relationship with the variable AUDIT score.

Table 4.8: Zero order bivariate correlations for regression for research question three.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
<th>X7</th>
<th>X8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit (X1)</td>
<td>278</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (X2)</td>
<td>278</td>
<td>.073</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (X3)</td>
<td>278</td>
<td>.068</td>
<td>.566</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy (X4)</td>
<td>277</td>
<td>-.223</td>
<td>-.149</td>
<td>-.148</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hopelessness (X5)</td>
<td>277</td>
<td>-.007</td>
<td>.393</td>
<td>.359</td>
<td>-.346</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity (X6)</td>
<td>277</td>
<td>-.144</td>
<td>.151</td>
<td>.119</td>
<td>-.104</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation Seeking (X7)</td>
<td>277</td>
<td>.087</td>
<td>-.086</td>
<td>-.085</td>
<td>.113</td>
<td>.255</td>
<td>.258</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Gender (X8) (0 = M, 1 = F)</td>
<td>278</td>
<td>-.232</td>
<td>.217</td>
<td>.108</td>
<td>.065</td>
<td>-.342</td>
<td>.059</td>
<td>-.035</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: Significance values (2nd value in each cell) represent one tail statistical significance tests.
The regression results for the third research question are summarized in Table 4.9 below. The results reveal the effects of anxiety, depression, hopelessness, impulsive behavior, sensation seeking, and self-efficacy on level of dependence on alcohol. The multiple regression revealed that in the saturated model self-efficacy, without the moderator variable, contributed significantly to the regression model, \( F = 4.356, p < .001 \) and accounted for 8.8% of the variation in the AUDIT score. The standardized beta coefficients showed that self-efficacy had a weak, negative effect on AUDIT score (Beta = -.255, p < .001). Hopelessness (Beta = -.152) and impulsivity (Beta = .128) also made significant, although minor, contributions to explaining differences in the AUDIT score.

The table also summarizes the relative influence of the five other predictor variables when gender is added to the model. The regression results with the moderator revealed that in the saturated model gender (Beta= -.227) contributed significantly to the regression model, \( F (7, 148) = 5.925, p < .001 \) and accounted for 13.4% of the variation in the AUDIT score.

In the reduced final model five variables were statistically significant (p <.05). Self-efficacy (Beta = .222) and Gender (Beta = -.218) had moderate effects on AUDIT scores. Hopelessness (Beta = -.153), Impulsivity (Beta = .134) and Anxiety score (Beta = .124) had slightly lower effects on Audit score variations.
Table 4.9: AUDIT Score Regressed on Mental Health and Personality Dimension Variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Saturated Model Without Moderator</th>
<th>Saturated Model with Moderator</th>
<th>Reduced Model with Moderator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>p</td>
<td>Beta</td>
</tr>
<tr>
<td>Anxiety Score</td>
<td>.048</td>
<td>.510</td>
<td>.101</td>
</tr>
<tr>
<td>Depression Score</td>
<td>.049</td>
<td>.497</td>
<td>.046</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>-.255</td>
<td>&lt;.001</td>
<td>-.222</td>
</tr>
<tr>
<td>Hopelessness Score</td>
<td>-.152</td>
<td>.032</td>
<td>-.159</td>
</tr>
<tr>
<td>Impulsivity Score</td>
<td>.128</td>
<td>.046</td>
<td>.132</td>
</tr>
<tr>
<td>Sensation Seeking Score</td>
<td>.062</td>
<td>.328</td>
<td>.007</td>
</tr>
<tr>
<td>Gender (0 = M; 1=F)</td>
<td></td>
<td></td>
<td>-.227</td>
</tr>
<tr>
<td>Model Summary</td>
<td></td>
<td></td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>df</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>R Square</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Adjusted R Square</td>
</tr>
</tbody>
</table>
CHAPTER FIVE: DISCUSSION

Explored in this study were the effects of mental health, familial history, and personality dimensions on level of dependence on alcohol. In this final chapter, I summarize the findings of my quantitative study, discuss implications and contributions of this research in terms of counselors as well student affairs professionals, review the strengths and limitations of this study, and discuss future research lines.

Discussions of Results

The connection of anxiety and depression on level of dependence on alcohol has been established in the literature (Ortiz-Gomez, Lopez-Canul, and Arankowsky-Sandoval, 2014; Pickard & Fazel, 2013). Other factors that may contribute to level of dependence are being explored in the literature, but the connections of mental health with other dimensions needs to be explored further. The results of this study provided a new level of understanding particularly in reference to self-efficacy and personality dimensions.

Research Question 1 – Mental Health, Behavioral Indicators and Family History

The first research question was used to explore student’s mental health (anxiety and depression), family history, other drug use, and number of consequences on level of dependence on alcohol (AUDIT). This analysis was completed by looking at ratings for anxiety (OASIS), depression (PHQ-9), number of family members who have problems with alcohol, number of other drugs used, and number of consequences and then change in AUDIT. Regression analysis was utilized to examine difference in level of dependence.
Collectively the explanatory (independent) variables accounted for 33.8% of the difference in the AUDIT value. In the larger population of a similar group of people, a conservative estimate, adjusted R square, would be 32.67% of the difference in AUDIT (level of dependence) would be explained.

Based on the scholarly literature, certain variables, anxiety and depression in particular, were expected to be highly connected to level of dependence as measured by the AUDIT (Ortiz-Gomez, Lopez-Canul, & Arankowsky-Sandoval, 2014; Pickard & Fazel, 2013). Unexpectedly in this study, other drug use and number of consequences (self-reported behavioral indicators) were found to be statistically significant; whereas, anxiety, depression, and family history were not significant. However, the last three variables, while not statistically significant still have practical value.

The findings related to other drug use and number of consequences are appropriate based on the practical link between level of dependence and these two behavioral indicator variables. The greater the other drug use, the higher the AUDIT value (level of dependence) and the greater the number of consequences, the higher the AUDIT value. This begs the question, of these two significant variables, is one variable more important or are they similar? The Beta value for number of consequences (.496) was twice as high as other drug use (.230), indicating that this variable carries two times as much importance when compared to other drug use as they relate to level of dependence.

Adding gender as a moderator to RQ1, we see a slight increase in the R square value, which increased to 38.2%. While number of consequences is still statistically significant, other
drug use becomes less important than gender. To expand further on gender, findings indicated that males have higher scores on the AUDIT as compared to females.

While the findings for research question one in terms of number of consequences and other drug use as significant predictors (White & Hingson, 2014; LaBrie, Earle, Hummer, & Boyle, 2016; Spear, 2016; Mallett et al., 2017) fits with current literature, the non-significance of students’ state of mental health (anxiety and depression) does not align with the empirical literature (Ortiz-Gomez, Lopez-Canul, and Arankowsky-Sandoval, 2014; Pickard & Fazel, 2013). Thinking critically about these results has led to several possible explanations.

The first discussion point relates to student screening part of the participation recruitment process for the study. Inclusion and exclusion criteria were preset by the researchers based on student scores on several measures/variables to include undergraduate status, age (>18), level of dependence as reported from students’ AUDIT scores, and level of anxiety or depression as measured respectively on the OASIS or PHQ-9. As outlined in chapter 3, the process of obtaining participants through screenings was highlighted in Figure 1, p. 59 (Hustad et al, 2014). Of the original 547 college undergraduate students who were screened, 93 were deemed ineligible for the study due to being under the age of 18 and 2 students were ineligible for holding graduate student status.

Importantly for the discussion of research question one results, are the AUDIT, OASIS, and PHQ-9 scores. The cut-off score for level of dependence on the AUDIT was set at 16 or above. The 77 students who scored above the cut-off level were immediately referred to the campus counseling center for more intensive intervention. Also, the two students who reported having suicidal ideation were immediately sent for higher level intervention at the campus.
counseling center. This left 452 students as eligible to participate and only 278 consented to be a part of the study. It is possible to hypothesize that the students who volunteered to participate had lower levels of anxiety and depression based on the cut-off scores in screening process. The remaining students may not quite reach the threshold for mental diagnoses with anxiety or depression; therefore, they would not have had as high of scores on the OASIS or PHQ-9. The results of the study may have varied if all students, regardless of scores on the AUDIT, OASIS or PHQ-9, had been included in the research. Additionally, only 62% of the potential participants agreed to be in the study, and we have no data on the other 38% who self-selected not to have their scores included. There might be some self-selection bias impacting the data.

If self-selection bias impacted the data, quite possibly the participants may be at a ‘precursor state’ of alcohol use, meaning that before a higher level diagnosis is reached students may still be experiencing higher levels of dependence. To further explain, in this ‘precursor state’ students are not displaying enough symptoms of anxiety or depression to cause them to score high on the OASIS, PHQ-9, or AUDIT. The higher scores on the AUDIT (16 or higher) and the suicidal ideation which is measured by the PHQ-9 could have eliminated students from the study. I am hypothesizing that in this study, we are seeing what occurs before we see the mental health diagnosis show up. Future research should examine this hypothesis.

Individuals who have issues in life may use alcohol as a form of coping. Drinking alcohol or other drug use may be a symptom of other circumstances occurring in an individual's life. The "drug" is not the problem per say, but rather the events/circumstances with which the individual is coping (P. Lorah, personal communication, January 25, 2011). Coiro, Bettis, and Compas (2016) found that college students who self-reported “more interpersonal stress reported more
depression, anxiety, and somatization” (p. 177). The authors go on to discuss ‘disengagement coping strategies’ and how this avoidance of a student’s stressor (via rumination, suppression, or avoidance) were connected to anxiety and depression in a specific sense and to pathology generally. It is possible that alcohol consumption could serve as an avoidance technique. Bettis, et al. (2017) suggest that cognitive interventions may be more helpful to students than coping skills when addressing students at risk for psychopathology.

Another plausible interpretation for the results of this study is that anxiety and depression may not be significant due to the social drinking (aka lower high levels of drinking). Many of the students who had lower levels or were brought into BASICS for possessing alcohol in the dormitories. Some students did not have anything to drink (during their incident), but in fact they were in violation of campus policy because there was alcohol present in their dorm room.

Anxiety and depression as non-significant findings in this study can be framed in terms of the college student development theories previously discussed. In Baxter Magolda’s theory of self-authorship (2001), students may be depending on external reliance, indicating that students may depend on the social cues of their peers in order to make decisions. Their decision to drink may not be based on the student’s mental health needs, but rather their wanting to fit in with their peers. Chickering and Reisser (1993) also discuss to students’ desire to develop mature relationships. This desire to form relationships with peers may encourage students to drink rather than their own anxious thoughts or dysthymic/depressive thoughts. In these ways, peer voices have great influence as students are developing in the complex social arenas of higher education.

Research Question 2 – Self-Efficacy
Research question two was framed to explore how self-efficacy of handling or refusing a drinking situation, anxiety, and depression predict student’s level of dependence on alcohol (AUDIT score). This was completed by simultaneously examining how self-report ratings for anxiety (OASIS), depression (PHQ-9), and self-efficacy (DRSEQ-RA), influenced changes in AUDIT scores.

In this regression model, 5.1% of the difference in AUDIT score was explained by participants’ perception of their self-efficacy to handling the drinking situation (as measured by the DRSE), anxiety (as measured by the OASIS), and depression (as measured by the PHQ-9). This is a drastic change from the results in RQ1. Model one included behavioral measures/indicators and this second model does not include behavioral indicators or family history. Self-efficacy was statistically significant and negative, the higher a student’s self-efficacy score the lower the level of dependence as measured by the AUDIT score. I hypothesized, based on the current literature, that anxiety and depression would significantly predict level of dependence among college students. When behavioral indicators are not included the amount of explained variance decreased substantially.

When examining self-efficacy, anxiety, and depression variables as moderated by gender, 10.4% of the variance is explained as compared to 5.1% without gender. Self-efficacy is still significant and negative and gender has an increased influence. I found similar pattern in the regression analysis in the analysis for research question one in that gender does have a slight moderating influence in the explained differences in the AUDIT scores.
In the results for research question two, self-efficacy (higher scores indicate higher levels of drinking refusal self-efficacy) had a negative relation with level of dependence. This result is in line with scholarly literature (i.e., Gilles, Turk, & Fresco, 2006; Foster, Dukes, & Sartor, 2016), which indicates that as students develop higher self-efficacy to deal effectively with drinking situations, their level of dependence as assessed by their self-report AUDIT score would decrease. Students with a lower sense of their ability to refuse a drink, either based on circumstances such as social pressures from peers or even the opportunity to consume alcohol, would likely have increased AUDIT scores. This result can be connected directly to college student development theory. Chickering and Reisser’s (1993) theory frames this link through the process of students’ overall development. As students evolve to develop purpose and integrity, they make decisions that match this level of development. In other words, as students develop a sense of integrity, they may find that their self-efficacy to refuse or resist increases and their level of dependence on alcohol decreases. Baxter Magolda (1992; 2001) might view this in another way, seeing that as students increase self-efficacy and near self-authorship, they find internal definition rather than looking to peers or external reliance.

We can also look at self-efficacy as a protective factor against negative outcomes (Foster, Dukes, & Sartor, 2016). Increasing students’ self-efficacy of their ability to control their own drinking can serve as a way to reduce level of dependence on alcohol. This result is vitally important considering a long established, empirically supported literature that highlights college students report drinking more alcohol more frequently than non-college attending cohorts (Johnston, O’Malley, Bachman, & Schulenberg, 2012).
When adding in the variable gender as a moderator to the second model, both gender and self-efficacy are significant and the relationship with self-efficacy is still negative. This association with gender, as in research question one, points directly to males who were the majority of participants in this study. Being male influenced self-efficacy, in terms of drinking behavior, differently than female participants.

**Research Question 3**

This final research question was framed to explore the influence of mental health variables (anxiety score on the OASIS and depression score on the PHQ-9) and personality dimensions (SUPR subscale scores) on the level of dependence (AUDIT score). Through regression analysis anxiety and depression along with the variables of hopelessness, impulsive behavior, sensation seeking, and self-efficacy explained 8.8% of the difference in level of dependence. Hopelessness, impulsivity, and self-efficacy were all statistically significant. Sensation seeking (as measured by the SURP subscale score) was not significant in this study though the reliability of the summated Likert scale scores for this subscale was somewhat low and may have contributed to the lack of significance for this variable. Low reliability usually contributes to underestimating the relationship between two variables.

When the variable, gender, was added as a moderator to the mental health and personality dimension variables 13.4% of the difference in level of dependence as measured by AUDIT scores was explained. Both self-efficacy and gender were significant. In all the regression analyses for the three research questions in this study, gender was a significant moderator (statistical interaction).
The results we see for the third research question echo back to other previous research questions with common themes across them. Depression, again, was not a significant predictor of students’ level of dependence in RQ3. As hypothesized earlier, this result may be due to some of the students being eliminated from the study through the initial screening process. Other researchers, who study alcohol use among college students, have found differences among students in terms of the influence of depression versus anxiety on drinking behaviors (Armeli, et al., 2014). It is possible that the students in this study were not experiencing or framing how they were feeling as a negative emotion or being depressive symptoms. Instead, participants drinking behaviors may have been more related to social processes versus feeling clinically depressed.

Anxiety was statistically significant for research question three. This result could be due to the interaction between anxiety and the personality traits. In research question three, anxiety becomes significant in the model with personality traits of hopelessness, impulsivity, and also self-efficacy. Students were not initially screened based on their OASIS score (anxiety), like they were on their AUDIT score (level of dependence) and PHQ-9 score (depression/suicidal ideation). The predominately 18-19 year-old male participants in this study seemed to reflect a combination of personality traits interacting with anxiety (OASIS scores) to predict/explain a level of dependence as measured by the AUDIT scores. Armeli et al. (2014) saw connections between anxiety and drinking to cope, but not depression. Specifically, the authors found that in college students who completed self-reported internet based surveys, there was an interaction between ‘drinking to cope’, average levels of drinking, and anxiety in terms of predicting drinking related problems.
In this study, multiple personality dimensions are significant including hopelessness, impulsivity, as well as self-efficacy. Hopelessness results for my participants, could be related to depression and hence has a connection with level of dependence. Hopelessness may have registered with participants even when their depression was not significant because it is at a lower level of impact in terms of mental health than suicidal ideation, which would have caused students to be eliminated from the study. Hopelessness has a negative relation to level of dependence (higher scores on the hopelessness scale indicate higher levels of positivity or hopefulness; therefore, lower scores would mean higher levels of hopelessness). The beta value was negative with and without the moderator added into the model. Students in this study who were more hopeful, had lower levels of dependence.

Impulsivity is also significant and has a positive relationship with level of dependence. This finding indicates that the higher the impulsivity score the higher the level of dependence. The results in this study are similar to other research findings on college student drinking (Baer, 2002) where impulsivity is framed as students acting before thinking through the consequences (Magid, MacLean, & Colder, 2007). It is plausible to hypothesize that the 18-19 year-old college students in this study entered a novel environment on the college campus where new experiences related to opportunities to drink on a regular basis could lead to the tendency to act before thinking about the negative consequences. This positive relationship continues even when the moderator, gender, is added to the model. Gender has a negative relationship with level of dependence. The same pattern we have seen before with the other two research questions, males typically have higher level of dependence on alcohol than females. Also, self-efficacy is significant just as in RQ2. Self-efficacy continues to have a negative relation with level of
dependence. Again, we see that the higher the scores on self-efficacy the lower the level of dependence on alcohol.

This section has framed my research study results to previous literature and frameworks espoused by scholars. In the broader picture, in the following I will discuss how the results of this study can benefit Counselor Education and Student Affairs Professionals.

**Implications**

Counselor educators, student affairs professionals, and counseling services on college campuses can benefit from knowledge gained in these research findings about how mental health, familial history, and personality dimensions benefit are related to level of dependence.

**Counselor Education**

Counselor Education will benefit from these research findings in terms of adding knowledge to general counselor training and addictions training. Asfaw et al. (2017) identifies the need for counseling programs to promote training that provides specific skills and dispositions. These authors believe it is vitally important to include training in the “effectiveness in addictions treatment and beliefs about the stigma of addictions” (p.164). Lee (2014) also recommends the need for counselor trainees to learn about addiction treatment. The author though proposes that many counseling master’s-level graduates do not receive necessary training in addictions or content areas related to this topic. Lee (2014) suggests that while CACREP-accredited programs document exposing students to the 11 addiction related content areas, there is vastly different coverage of the vital content such as screening, assessment, diagnosis, prevention, intervention, treatment options, counseling strategies, etiologies, co-occurring disorders, pharmacology, and process addictions.
Counselor educators can also benefit from the findings this study as there is a paucity in the number of addictions research studies in counseling journals. Moro, Wahesh, Likis-Werle, and Smith (2016) postulate that the smaller number of journal articles and conference presentations on addiction topics may be a result of counselor perceptions. Many counseling students within CACREP-accredited programs believe that substance abuse counseling is a separate profession or a specialized area of knowledge within counseling. The authors propose that more continuing education may be necessary for many counselor educators and not just the one faculty member at the institution who teaches addictions courses. Moro, Wahesh, Likis-Werle, and Smith assert (2016) that counselor educators and addiction counselors who do focus on various aspects of addiction may be submitting their research to journals which have a specific addiction focus as the reason for so few articles in counseling journals.

Counselor educators can also use the results of this study to enhance counselor trainees’ understanding of the empirically supported link between anxiety, depression, and substance use. Research studies such as this one and others can be integrated into course content across the counseling curriculum. For instance, theory and clinical courses can use recent findings, in addition to this study, such as Riper et al (2014) who looked at the treatment of major depression and alcohol use disorder in terms of treatment with motivational interviewing (MI) and cognitive behavioral therapy. The treatment with MI and cognitive behavioral therapy was found to be significant for clinically diagnosed depression and lower levels along with comorbid alcohol use disorders. Blankers, Salemink, and Wiers (2016) also found that for depression, anxiety, and substance use disorders computer based CBT along with cognitive bias modification were effective in treating these three disorders simultaneously.
Foster, Buckner, Schmidt, and Zvolensky (2016) studied both cannabis use and alcohol use in relation to social anxiety and ‘depressive’ symptomatology among individuals seeking treatment for tobacco smoking. These researchers found that social anxiety at higher level and depression at lower levels were associated with higher levels of drinking. Also, individuals who smoked nicotine while showing symptoms of being anxious and having lower levels of depression often used cannabis in terms of coping-oriented motives. Foster, Buckner, Schmidt, and Zvolensky summarize this efficiently by stating “The present findings support the perspective that among multi-substance users, the interplay between social anxiety, depressive symptoms, and coping-oriented motives for using one substance (e.g., cannabis or alcohol) may pose difficulties in refraining from other substances (e.g., tobacco)” (p.165).

**Student Affairs Professionals**

The findings of this study can enhance student affairs professionals’ understanding of the links between mental health, familial factors, and personality dimensions related to drinking. Student affairs professionals are trained to work with college students in a higher education setting. They work with students who are developmentally changing and learning who they are through their time at a university. This relates specifically to Chickering’s vector five, establishing identity, when a student is learning about the facets of their personality and their full self or ‘I’ (Chickering & Reisser, 2003). In thinking about the personality dimensions explored in research questions two and three, self-efficacy, hopelessness, and impulsivity were significant. When gender was added, however, only self-efficacy was still significant; as being male influenced the results. Student affairs professionals can consider this personality dimension of self-efficacy to be a key when working with males and their differences in level of dependence on alcohol. Higher levels of self-efficacy can be found within individuals who had positive
religious coping (Giordano, et. al, 2016) whereas low levels have been associated with childhood maltreatment (Lu, Wen, Deng, & Tang, 2017) and trauma history (Saxena, Grella, & Messina, 2016).

Schwartz, et al., (2010) also found that having an established identity serves as a protective factor for students’ specifically for risky behaviors including drinking and other drug use. Chickering and Reissler’s (1993) findings can also assist student affairs in terms of vector six, students’ developing purpose. As students engage in future planning of interests, career goals, along with values, both individual and family based, the student may engage more in their decision making process. In terms of the data for participants in this study, especially males who had high number of consequences, I was able to explain a greater percent of the differences in their AUDIT score. This may mean that for students, who recognize a high number of consequences, they may also see a high AUDIT score. It’s possible that this self-awareness could lead to discussions about purpose and about the student’s decisions that caused consequences up to that point. A study found that students, who practiced mindfulness and had ‘purpose in life’, were able to reduce negative outcomes associated with depressive and anxious symptoms as well as alcohol-related problems (Pearson, Brown, Bravo, & Witkiewitz, 2014).

Counseling Services on College Campuses

Professionals within counseling service centers on college campuses will have more depth of understanding about how BASICS can be used as an effective treatment for level of dependence. Counselors have been aware for some time that anxiety and depression have connections to alcohol and other drug use, however, this study connects those mental health factors to other variables. These counselors will also be able to expand their knowledge of how family history influences dependence. In this study, I examined the connections of six different
types of family members and how the sum total of those relatives connect to a student’s level of
dependence. Counselors will also be able to explore the connections to an individual’s
personality factors including self-efficacy, hopelessness, impulsive behavior, and sensation
seeking.

The results in this study show that all four of these factors make a difference in level of
dependence. Self-efficacy, hopelessness, and impulsive behavior were found to be significant in
two of my research questions. When gender is added into the regression model, self-efficacy was
the most significant personality dimension. Counselors could dialogue with their college student
clients about self-authorship in relations to self-efficacy. Counselors will also want to consider if
students are instead relying on external forces versus self-authorship related to their alcohol use.
Peer voices may impact alcohol use significantly (Barnett, Ott, Rogers, Loxley, Linkletter, &
Clark, 2014) whereas parental voices may act as a protective agent (Kaynak, et. al., 2012).

Strengths and Limitations of the Study

Limitations

There are a number of limitations that I will discuss including my inability to choose
specific measures, data collected through self-report surveys, nature of the participants, and
generalizability. Over the next paragraphs I will look to explore these limitations and the
potential impacts they had on this study.

The data for this study were accessed from a larger dataset previously collected from
students across two academic years. The measures were selected by a research team prior to my
involvement with the BASICS program. Hence, the data stand as they are because no other
measures could be added and no further details from the student participants could be gathered.
A second issue of the study was that the data provided by college students were all self-reported. Self-reported data are known to have validity issues because individuals potentially may expand or reduce their experiences depending on their perception. In this study in particular, this may result in students altering the amount of alcohol consumed, which could ultimately lead to a change in the level of dependence or AUDIT score. While there are concerns about self-reported data, it is a commonly used method due to its cost effective and efficient nature.

Another limitation of the study was the nature in which the participants came to be included in the study and their demographics. The students were mandated to the study based on a violation of the university’s alcohol policy. Because the participants were mandated and not voluntary, this may have impacted their answers to the measures in the data set. The demographics for the participants are of concern as well. The undergraduate student participants were mostly 18 to 19 year olds (73.5%), white males and enrolled at a predominately white institution (PWI) in the northeast. To take this a step further, the ratio of white male study participants was higher than the PWI’s student population. The institution’s undergraduate student populations is currently 67.2% white, 53.5% male while the BASICS study participants were 82% white, 66.9% male (University Factbook, 2016). This sample raises a concern regarding the generalizability, these results are generalizable to the white, male populations, but may not be directly applicable to other sub groups of the population.

**Strengths**

This study had a number of strengths including the sample size, measures, reliability and validity, as well as the relationship of the author to the data and understanding of BASICS program. In the following paragraphs, I will expand on each of these strengths and clarify for the reader their importance.
One of the strengths of this study includes the samples size $N = 278$ overall when including the moderator gender, which lead to a robust power analysis. A second strength is the measures that were used to collect data. While I did not personally select the measures for collection, I was able to implement them during my time in the BASICS program. The measures used, which are discussed in detail in chapter three, are standard measures and are readily used to assess psychometric properties (OASIS and PHQ-9). In a study that is influenced by many factors, due to the complexity of student drinking, it is confidence-building to have these ‘gold standard’ measures. This confidence is reinforced by the acceptable reliability of student scores on these measures in my study.

Another of the strengths of this study was that the author ‘lived it’, had the full experience of being a health educator, or BASICS staff member, for two years. The amount of time I spent working with BASICS was equivalent to the timeframe it took to collect that dataset for this study. I was in this department beginning the fall right after the data collection for this study ended and proceeded to work the department for two full academic years.

During that timeframe, I worked with students individual; these students were also mandated to the program based on the same criteria as those from the study, violations on or off campus. This real life connection to the data allowed me to see, or envision, those students who had gone before. I was able to use my lived experiences to understand and interpret this data in a way very different way as contrasted to if I had just been conducting cold research on a given dataset. I have a passion for these students reflected in the data because I have a vision of others that were in similar circumstances. In reality, each of these cases signifies a real student that very likely could have been walking past me on the campus one to two years after their recorded BASICS attendance. This gives me the ability to interpret the data in a humanistic way.
I see this human factor as strength beyond myself, all of the health educators contributed to students’ ability to engage with the BASICS process. Based on my experiences and observations of other BASICS staff, I believe that this human agency especially influenced student self-efficacy. The ability to dialogue, role play, about certain contexts in which a student may or may not decide to consume alcohol and how much, was a catalyst for students to think about their motivation to change (Miller, Zweben, DiClemente, & Rychtarik, 1992). This other non-biased person engaging in this dialogue, aka health educator, created a new person in the student’s network of relationships. This points to Chickering’s vector four, developing mature interpersonal relationships, and Baxter Magolda’s concept of crossroads, where students begin to question external formulas, such as those of higher-drinking-level peers.

The strengths and limitations section of this chapter point to multiple lines of future research, there are also a number of others I would like to explore. In the following paragraphs I will look to examine opportunities to learn more about this study’s questions and the college student population.

**Recommendations for Future Research**

In this study, I was able to demonstrate that factors outside of anxiety and depression have an influence on substance use and level of dependence. It would be of interest to further explore some of the same variables including familial history and the personality dimensions.

In addition, future research should include some of the populations that are not as well represented in this study such as females, ‘non-binary’ students or students who do not identify as part of the gender binary, race and ethnicity groups other than white, institutions of higher
education that are not PWI, and non-traditional age college students (e.g. adult learners, students admitted to college at a young age).

As discussed earlier, the majority of students in this study were male. In looking at female or non-binary gender experiences, researchers may find that populations who identify as minorities in the broader social context may have very different experiences. I use the ‘non-binary’ term in this study as a reflection of the original measures. Students were given the option to identify as either male or female in terms of gender. Additionally as mentioned earlier, 18 students left this question blank. A hypothesis could be made that possibly these 18 participants do not self-identify with binary terminology. Future researchers will want to expand the choices available to participants providing them with options that fit more closely with their gender identity.

When taking into account gender, one may want to consider the different ways in which genders perceive items on the different measures included in this study. Differences in perception may not only be due to gender but also developmental differences as a student’s brain and ability to process information continues to grow throughout their college years and beyond.

To expand beyond the findings of this study, BASIC researchers may also want to consider how students interpret core terminology such as ‘consequences.’ Eighteen- and nineteen-year-old students may developmentally frame consequences as events for which they get in trouble rather than events that happen to them based on choices/circumstances. An example from this study could be highlighted through one of the 92 females in the study. This one female participant is used to demonstrate how consequences might be interpreted if the
student endorsed ‘My drinking has gotten me into sexual situations that I later regretted.’ (YAACQ, Questions 35) and an item which reads ‘Been pressured to have sex with someone when you were too drunk to prevent it’ (WPI, Question 3). From these endorsed items, it would appear to the health educator that this student had experienced a sexual assault as a consequence of drinking. Future BASIC researchers, can use Chickering and Baxter Magolda’s frameworks to guide their understanding of how she might interpret this event. Chickering and Baxter Magolda point to the level of developmental processing a student of 18 to 19 years old is capable of at this point. The health educator may play a role in ensuring that the student interprets this sexual assault as something that happened to her rather than something for which she is getting in trouble.

Baxter Magolda frames this in terms of external forces, health educators can help this student frame the assault in such a way that the student connects with resources via the institution (counseling center, health center, center for women students, etc.) and the surrounding community. Also, Motivational Interviewing (MI) can provide a frame as well. MI is meant to help her explore these events/consequences and not place blame. MI would echo her language that would motivate change behaviors to reduce risk associated with higher levels of drinking.

While this particular example uses a female participant, this is not meant to indicate that male students do not endorse items related to drinking getting them into sexual situations they may have later regretted, as the literature clearly demonstrates that males are also at risk for these type of assault consequence (Allen, Ridgeway, & Swan, 2015; Turchik, Hebenstried, & Judson, 2016). However, male students who have been victimized would be less likely to respond to the
above-indicated endorsed items in such a way that a health educator would gain information needed to address issues of sexual assault.

To compare this concept to the male participants in this study, a male student may have marked “I have received a lower grade on an exam or paper than I ordinarily would have because of my drinking (YAACQ, Question 14)”. In this situation, a health educator could frame the choice/circumstance and refer a student to their academic adviser, faculty member, or other learning assistance resources while using MI skills to encourage change behaviors.

It is important to consider different race/ethnicity groups when interpreting study variables. In my study, 18% of participants in this study were identified as students of color. It is important to consider this portion of the participants for future research. For example, consider that of the participants in this study, 2.2% of the student participants in the BASICS data identified as Black, whereas 4.16% of the undergraduate students at the institution identify as Black/African American (University Factbook, 2016). Overall, 19.4% of undergraduate students at the institution identify with a category other than ‘white’, ‘race/ethnicity unknown’, or ‘international’. There are multiple ways to think about these data. A hypothesis might be made that these students are doing something differently and entering BASICS in lower numbers. There could also be a much more complicated explanation. For instance, these Black/African American students and other minority students at the institution may not be given the same access to BASICS, as their consequences for alcohol or drug violations can be different than other students; including but not limited to arrest or expulsion (Karp & Frank, 2016). Across the college campus, Black/African American students may not be referred in the same manner to student affairs professionals (Franklin, 2016; Karp & Frank, 2016; Whitman, 2016), causing
these students in essence to be invisible and not be referred to BASICS. The health educators working in BASICS may not know the true numbers of various minority students who are in need of alcohol intervention and educational programming. To reach these student populations more effectively, health educators could implement different kinds of outreach, including marketing to minority student populations by offering educational programming that is specifically designed for them. Also, health educators could look into support mechanisms for the students including such things as mentorship experiences, the influence of spirituality, strong, positive peer connections, and so forth.

Qualitative research could be helpful to understand, from in-depth methodologies, the experiences that are different from the predominately white, male participant pool in this study. For instance, students from other ethnicity/racial backgrounds such as the previous example of students who identify as being the Black/African American or students who would self-identify as part of the LGBTQA community could provide quite different perspectives about their lived experiences. Several recent quantitative articles have pointed to sexual-orientation differences. Coulter, Marzell, Saltz, Stall, and Mair (2016) discuss that sexual-orientation differences need to be addressed by addiction researchers and prevention/intervention programs designed to address alcohol use. These authors go on to state that currently “there are no effective drinking interventions that specifically target LGB college students” (p.198). The results of their study, which surveyed undergraduate students across 14 different universities, demonstrated different drinking patterns in terms of frequency among LGB students than for the same gendered heterosexual peers. Coulter, et al. (2016) also considered context (i.e., Greek parties, bars, restaurants) of where student drinking occurs related to sexual-orientation
differences. The authors propose that LGB students may not be affiliated with Greek life and not having the benefits of interventions that focus on the university Greek system. Transgender students were not a part of the Coulter et al. (2016) study. Tupler et al. (2017), however, did a study specifically focused on approximately 1,000 newly matriculating transgender students. The authors continued the conversation started by Coulter et al. as it relates to sexual-orientation differences among college students by proposing that institutions of higher education will need to address the unique circumstances of transgender men and women. The authors framed their participants’ drinking as maladaptive in terms of coping strategies. Findings indicated that transgender students experienced more negative consequences and had more blackouts than their cisgender peers. Tupler et al. suggest that comprehensive efforts are needed to address college student drinking for all students including those who self-identify as transgender.

One could further examine how adult learners might fare in a BASICS program as age could also be playing a vital role in student’s personality dimensions and level of dependence. In my study, 73.5% of participants were 18-19 year olds. As students develop throughout their time in higher education, their behaviors, decision making, and values may shift or solidify into certain patterns. Some studies have looked alcohol use among nontraditional students. For instance, Turrisi, Padilla, and Wiersa (2000) found that nontraditional freshmen were less likely to experience negative consequences than their more traditionally aged peers. Hagedorn (2014) states that adult-learners are “just as likely as their younger counterparts to deal with health or mobility issues, learning disabilities, or be battling issues such as depression or addiction” (p.309). Turrisi et al. (2000) suggested that interventions need to be more tailored based on
differences in college student populations, including age, if programs to reduce drinking and its consequences are to be effective.

Future research could also look into familial history further and possibly into family interventions. Ortiz-Gomez, Lopez-Canul, and Arankowsky-Sandoval (2014) discuss that their “results highlight the need to promote programs aimed at preventing addictions within the family, since it predisposes other members to repeat such behavior” (p.14). To follow this train of thought, one could consider combining BASICS programming for college students along with familial education to promote risk reduction and decreased level of dependence for immediate and/or extended family.

Quantitative methods were used in this study to explore level of dependence and the various independent variables. While this method provides a clear picture of the outcomes for a large group of college student participants, it would be interesting to see an in depth portrait of a select number of individuals journey through BASICS as well as hearing from the health educators about their interactions with students. The interactions with students could lead to further understanding of how familial history impacts student and how their personality dimensions play out in specific alcohol-related scenarios.

A future line of research could include looking at students’ readiness to change specifically as it relates to Motivational Interviewing with college students (Miller, Zweben, DiClemente, & Rychtarik, 1992). One could look at this readiness to explore if students make adjustments to their consumption of alcohol and, furthermore, to their level of dependence on alcohol. One could also explore a student’s state of readiness to change during MI stages (i.e.
pre-contemplative or contemplative) to predict decreases or increases in level of dependence (AUDIT scores).

The results of this study provide important research for the counseling profession, higher education institutions, student affairs professionals, and the college student population because it gives us further understanding and insight into the factors that influence level of dependence on alcohol. This is a global and multidisciplinary area of concern, and further research is warranted.
References


APPENDIX A

Regression Residual Analysis Graphic Examples
APPENDIX B

Graphical Summary of Moderator Effect for Gender
Graphical Summary of Moderator Effect for Research Question One
Graphical Summary of Moderator Effect for Research Question Two
Graphical Summary of Moderator Effect for Research Question Three
Graphical Summary of Moderator Effect for Research Question Three (continued)
APPENDIX C

Institutional Review Board (IRB) Documentation

Date: June 19, 2017

From: Philip Frum, IRB Analyst
To: John Hustad

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

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.
APPENDIX D

Anxiety Measure

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

The 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 = In frequent 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 lifestyle 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.


Score: _________
APPENDIX E

Level of Dependence Measure

Alcohol Use Disorders Identification Test (AUDIT; Babor, Saunders, Aasland De La Fuente, & Grant, 1993; and Babor, Higgins-Biddle, Saunders, Monterio Second edition, 2001)

World Health Organization
APPENDIX F

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

1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
1 2 3 4 5 6
APPENDIX G

Personality Trait Measure

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.
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 H

Depression Measure

Patient Health Questionnaire (PHQ-9; Spitzer, Williams, Kroenke, & colleagues, 1999)
Pfizer Inc.
Vita
Heather Anne Atkinson, Ph.D, NCC
101 Cedar Lane
State College, PA 16801
haa5121@psu.edu

EDUCATION
Ph.D., Counselor Education, The Pennsylvania State University, August 2017
M.A., Community Counseling, University of Mary Hardin-Baylor, May 2010
B.S., Psychology, Minor: Biology, Texas Lutheran University, May 2008

CERTIFICATIONS
National Certified Counselor, July 2015 – Present

PROFESSIONAL EXPERIENCE
DUS Programs Coordinator – Smeal College of Business, The Division of Undergraduate Studies, The Pennsylvania State University, January 2017 – Present

Undergraduate Studies Adviser, The Division of Undergraduate Studies, The Pennsylvania State University, December 2014 – Present

Academic Consultant/Adviser for New Student & International Student Orientations, The Division of Undergraduate Studies, The Pennsylvania State University, May 2014 – August 2014

BASICS & MIP Graduate Assistant, Department of Health, Promotion, and Wellness, The Pennsylvania State University, August 2012 – May 2014

Doctoral Supervisor, The CEDAR Clinic, The Pennsylvania State University, August 2011 – May 2012

Dean’s Research Assistant, Department of Counselor Education, The Pennsylvania State University, August 2010 – May 2012

PUBLICATIONS