



University of Kentucky
UKnowledge

University of Kentucky Master's Theses

Graduate School

2006

DOES OPTIMISM EXPLAIN HOW RELIGIOUSNESS AFFECTS ALCOHOL USE AMONG COLLEGE STUDENTS?

Benjamin Lee Collier

University of Kentucky, benjamin.collier@uky.edu

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Recommended Citation

Collier, Benjamin Lee, "DOES OPTIMISM EXPLAIN HOW RELIGIOUSNESS AFFECTS ALCOHOL USE AMONG COLLEGE STUDENTS?" (2006). *University of Kentucky Master's Theses*. 398.
https://uknowledge.uky.edu/gradschool_theses/398

This Thesis is brought to you for free and open access by the Graduate School at UKnowledge. It has been accepted for inclusion in University of Kentucky Master's Theses by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

ABSTRACT OF THESIS

DOES OPTIMISM EXPLAIN HOW RELIGIOUSNESS AFFECTS ALCOHOL USE AMONG COLLEGE STUDENTS?

Alcohol use, because of its many negative consequences, is the number one health problem facing college students. Because of this, researchers have looked for factors associated with reduced drinking. Religiousness is one such factor. Religiousness is a complex, multidimensional construct, and while it tends to be negatively associated with alcohol use, research progress has been slow due to the tendency of researchers to poorly operationalize this construct and to design studies that fail to go beyond the bivariate relationship of religiousness and alcohol use. In order to address these shortcomings, this study will assess two dimensions of religiousness, religious commitment/motivation and religious consequences, and will test a model, presented by Koenig et al., (2001), that postulates religiousness works through mental health in order to reduce alcohol use. More specifically, this study will test optimism as a possible mediator and moderator of the relationship between religiousness and alcohol use.

This study used archival data from 260 (202 female and 58 male) Caucasian, Christian, undergraduate college students who completed a battery of surveys that included measures of religiousness, optimism, and alcohol use. A factor analysis was conducted on one measure of religiousness, the short form of the Faith Maturity Scale. Also, optimism was tested as both a mediator and a moderator for both dimensions of religiousness in predicting alcohol use.

Findings indicated optimism is not a significant mediator of the religiousness-alcohol use relationship because optimism did not meet the preconditions for a mediator as it was not associated with alcohol use in this sample. Also, optimism was not a significant moderator of religious commitment/motivation, but it did moderate the relationship of religious consequences and alcohol use. Finally, the two dimensions of religiousness interacted in predicting alcohol use. While both dimensions of religiousness were negatively associated with alcohol use throughout the findings, gender was a significant moderator in all significant interactions.

Several implications follow from this study. First, greater specificity is needed regarding Koenig et al.'s (2001) model specifically in regards to which third variables are associated with which health outcomes and to whom the model applies. Second, this study highlights the importance of a multidimensional assessment of religiousness. Finally, this study indicates specificity is needed regarding what religious interventions will be helpful for which genders.

KEYWORDS: Religiousness, Optimism, Alcohol Use, Model Testing, College Students
© Benjamin Collier 2006

Benjamin Lee Collier

12/13/2006

DOES OPTIMISM EXPLAIN HOW RELIGIOUSNESS AFFECTS ALCOHOL USE AMONG
COLLEGE STUDENTS?

By

Benjamin Lee Collier

Tamara Brown, Ph.D.
Director of Thesis

David Berry, Ph.D.
Director of Graduate Studies

12/13/2006

RULES FOR THE USE OF THESES

Unpublished theses submitted for the Master's degree and deposited in the University of Kentucky Library are as a rule open for inspection, but are to be used only with due regard to the rights of the authors. Bibliographical references may be noted, but quotations or summaries of parts may be published only with the permission of the author, and with the usual scholarly acknowledgments.

Extensive copying or publication of the thesis in whole or in part also requires the consent of the Dean of the Graduate School of the University of Kentucky.

A library that borrows this thesis for use by its patrons is expected to secure the signature of each user.

THESIS

Benjamin Lee Collier

The Graduate School
University of Kentucky

2006

DOES OPTIMISM EXPLAIN HOW RELIGIOUSNESS AFFECTS ALCOHOL USE AMONG
COLLEGE STUDENTS?

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
College of Arts and Sciences
at the University of Kentucky

By
Benjamin Lee Collier
Lexington, Kentucky
Director: Dr. Tamara L. Brown, Associate Professor of Psychology
Lexington, Kentucky
2006

TABLE OF CONTENTS

List of Tables.....	v
List of Figures.....	vi
Chapter One: Introduction	
Alcohol Use among College Students.....	1
The Relationship between Religiousness and Alcohol Use.....	4
Purpose of the Study.....	11
Chapter Two: Methodology	
Participants	15
Measures	15
Procedure	17
Chapter Three: Results	
Missing Data.....	18
Results of Factor Analysis.....	18
Intercorrelations.....	20
Testing for Mediation.....	20
Testing for Moderation.....	21
Chapter Four: Discussion	
Does Optimism Mediate the Relationship between Religiousness and Alcohol Use?.....	34
Does Optimism Interact with Religiousness to Predict Alcohol Use?.....	36
Limitations.....	41
Conclusions and Implications.....	42
Appendices	
Appendix A: Intrinsic/Extrinsic-Revised Scale.....	46
Appendix B: Faith Maturity Scale- Vertical Scale.....	47
Appendix C: Faith Maturity Scale- Horizontal Scale.....	48
Appendix D: Life Orientation Test – Revised.....	49
References	50
Vita.....	56

LIST OF TABLES

Table 3.1, Summary of Factor Loadings for the Short Form of the FMS.....	23
Table 3.2, Descriptive Statistics for Study Measures.....	24
Table 3.3, Pearson Correlations among Study Variables.....	25
Table 3.4, Moderation Analyses for Religious Commitment/motivation predicting Alcohol use.....	26
Table 3.5, Moderation Analyses for Religious Consequences predicting Alcohol use.....	27
Table 4.1, Moderation Analyses for Gender, Religious Commitment/motivation, and Religious Consequences predicting Alcohol use.....	45

LIST OF FIGURES

Figure 1.1, Koenig et al.'s (2001) model suggests the relationship between religiousness and alcohol use may be mediated by mental health.....	13
Figure 1.2, The relationship between religiousness and alcohol use may be moderated by mental health.....	14
Figure 3.1, Relationships among religious commitment/motivation, optimism, and alcohol use for males.....	28
Figure 3.2, Relationships among religious commitment/motivation, optimism, and alcohol use for females.....	29
Figure 3.3, Relationships among religious consequences, optimism, and alcohol use for males.....	30
Figure 3.4, Relationships among religious consequences, optimism, and alcohol use for females.....	31
Figure 3.5, Interaction of religious commitment/motivation and gender in predicting alcohol use.....	32
Figure 3.6, Interaction of religious consequences and optimism by gender in predicting alcohol use.....	33
Figure 4.1, Interaction of Religious Commitment/motivation and Religious Consequences by gender in predicting alcohol use.....	46

LIST OF FILES

thesis.pdf 297k

Chapter One

Introduction

For many years, college student alcohol use has been a topic of interest (e.g., Perkins, 1985). This is probably because college students drink more heavily than other young adults (Brower, 2002) and this heavy drinking can lead to many negative results (Vicary & Karshin, 2002). Recently, interest in college student drinking has been heightened because of the Surgeon General's goal of decreasing heavy drinking among this population (U. S. Department of Health and Human Services [DHHS], 2000). Of particular interest is identifying factors that buffer against drinking among college students. Religiousness is one such factor. Research has shown that college students who describe themselves as religious are less likely to use or misuse alcohol than are college students who are not religious. What is unclear, however, is how or why this is so. What is the mechanism whereby religiousness influences alcohol use? Is that mechanism the same for all religious people? The answers to these kinds of questions are, as yet, unknown. The goal of the proposed study is to investigate one possible answer by examining the effects of optimism on the relationship between religiousness and alcohol use among college students.

First, I will review the literature on alcohol use among college students. In particular, I will describe aspects of college students' lives that make them particularly likely to drink heavily and list some of the many negative consequences college students face because of heavy drinking. Second, I will review the literature on the relationship of religiousness and alcohol use. There are many definitions and operationalizations of religiousness. Thus, as part of this review, I will discuss ways of conceptualizing religiousness and provide a dimensional model of this construct. Then I will discuss how religiousness is measured in the alcohol use literature and highlight the limitations of the extant literature in this area. Finally, I will discuss how optimism might explain the relationship between religiousness and alcohol use, and I will hypothesize about the nature of this relationship.

Alcohol Use among College Students

The late teens and early twenties are typically a period of major transition for young adults (Copraro, 2000). During this transition, young adults begin a process of individuation by developing their own beliefs, values, priorities, and decisions about appropriate and inappropriate behavior. This process is informed by their parents and peers (Capraro, 2000; Ichiyama & Kruse, 1998; Perkins, 1985), as well as by environmental contexts and experiences. One behavior many young adults explore is using alcohol. The use of alcohol during adolescence is considered to be normative, but adolescents vary greatly in the extent of use, with some experimenting with alcohol only once and others drinking frequently or in large quantities or both (Ichiyama & Kruse, 1998). In fact, the ages of 18 to 21 represent the heaviest time of drinking for most people (Chen & Kendel, 1995), but this is especially the case for college students (Brower, 2002; Ichiyama & Kruse, 1998; Quigley & Marlatt, 2001). Compared to their same-age, noncollege peers, college students are more likely to report having consumed alcohol in the last 30 days (American College Health Association [ACHA], 2005; Center for Disease Control and Prevention [CDC], 2004; Core Institute, 2005; Johnston, O'Malley, Bachman, & Schulenberg, 2004; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2002; Schulenberg, Bachman, O'Malley, & Johnston, 1994; Substance Abuse and Mental Health Services Administration [SAMHSA], 2003). They also tend to drink more heavily (CDC, 2004; Core Institute, 2005; DHHS, 2000; NIAAA, 2002; SAMHSA, 2003; Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002a; Wechsler, Lee, Nelson, & Kuo, 2002b), and to drink heavily

more frequently than their noncollege peers (Dawson, Grant, Stinson, & Chou, 2004; Slutske, 2005). Although their noncollege peers are more likely to consume alcohol daily, when they do drink, college students tend to drink more heavily (Slutske, 2005).

Why are college students likely to drink heavily?

Clearly, there is something about the college environment that is conducive to heavier alcohol use, and several researchers have speculated about this. For example, it has been suggested that college life may be favorable to heavy drinking because it often delays adult roles such as work, marriage, and family responsibilities that students' non-college peers have adopted (Quigley et al., 1996). Researchers have also suggested that college students drink in order to gain peer approval (Ichiyama & Kruse, 1998) and to feel a sense of belonging (Capraro, 2000). The need to belong or fit in makes students very impressionable to their peers' behaviors. In fact, peer behavior has been shown to be the strongest predictor of alcohol use among adolescents and college students (Mason & Windle, 2002; Perkins, 1985). Thus, students with heavy-drinking peers are much more likely to drink heavily than students with low or moderate-drinking peers (Abrams & Niaura, 1987). Some campus organizations — e.g. predominantly white fraternities and sororities and student athletes (Miller, 1998; NIAAA, 2002; Vicary & Karshin, 2002) — are conduits for this peer influence because they consider consuming alcohol and drinking heavily in college to be rites of passage (Vicary & Karshin, 2002). Thus, students who are members of these groups are more likely to drink.

Additionally, students' needs to belong and fit in make them sensitive to, and influenced by, their perceptions of the campus norms for drinking behavior (Capraro, 2000). For example, many students perceive that drinking heavily is a normative part of college culture (Capraro, 2000), and research shows that individuals' drinking behaviors are influenced by their perceptions of the cultural norms (Abrams & Niaura, 1987). Unfortunately, students tend to overestimate the degree of heavy drinking on their campuses (Capraro, 2000). Students with inflated estimations about heavy drinking on college campuses tend to drink more heavily than students with more accurate perceptions (Capraro, 2000). Correcting these misperceptions through campus-wide initiatives has been shown to decrease heavy drinking on college campuses (Capraro, 2000). If students perceive that attending parties with alcohol or participating in drinking games with peers are common activities for college students or if they perceive them as necessary for acceptance into the campus community, they will be more likely to drink and even to drink heavily, in order to fit in.

Also, many students expect positive effects from drinking (Ichiyama & Kruse, 1998). These expectancies were most likely formed by students internalizing social, parental, and peer attitudes toward alcohol and its effects on college students (Abrams & Niaura, 1987). This may include viewing advertisements or movies in which college students drinking alcohol were portrayed as fun or popular or hearing their parents reminisce about their "wild days" in college. Positive expectancies for alcohol use, such as enhanced socialization, increased positive affect, or decreased tension and negative affect, are reliably shown to increase drinking frequency and quantity (Abrams & Niaura, 1987).

Negative consequences of drinking

Alcohol use among college students, especially heavy alcohol use, is so problematic because it is associated with so many negative short- and long-term consequences for students themselves and for those around them (Brower, 2002; Vicary & Karshin, 2002; Wechsler et al., 2002a, 2002b). In national surveys that ask students to identify the types of negative consequences they experience from drinking (e.g. hangover, injury, and legal trouble), students

commonly report facing negative academic consequences due to drinking heavily. For example, students often report missing class, performing poorly on an exam (Core Institute, 2005; NIAAA, 2002; Wechsler et al., 2002b), falling behind in a class, or receiving a lower overall grade (NIAAA, 2002) due to their drinking. In fact, alcohol plays a role in 40% of students' academic difficulties and 28% of student dropouts (Vicary & Karshin, 2002). Also reported were a variety of negative health consequences that range from relatively minor consequences such as memory loss and vomiting (Core Institute, 2005; Vicary & Karshin, 2002; ACHA, 2005) to more serious consequences such as compromised immune system, gastrointestinal problems, and even brain damage (Vicary & Karshin, 2002).

In addition to experiencing problems that result directly from heavy alcohol use, students who drink heavily are also more likely to engage in other potentially harmful behaviors. For instance, students report being more likely to attempt suicide (Core Institute, 2005; NIAAA, 2002) or have unprotected sex while drinking heavily (ACHA, 2005; Miller, 1997; NIAAA, 2002; Vicary & Karshin, 2002). They also report being more likely to be hurt or injured due to a higher number of car accidents and increased fighting due to drinking (ACHA, 2005; Brower, 2002; Core Institute, 2005; Miller, 1997; NIAAA, 2002; Vicary & Karshin, 2002). In fact, 1,400 college students between the ages of 18 and 24 die each year from alcohol-related unintentional injuries, such as car accidents (NIAAA, 2002). Students who drink heavily also report engaging in unlawful behaviors, such as damaging property, physically assaulting their peers (ACHA, 2005; Brower, 2002; Core Institute, 2005; NIAAA, 2002; Vicary & Karshin, 2002), using illicit drugs (Vicary & Karshin, 2002), being sexually aggressive (e.g. sexual assaults and rapes, ACHA, 2005; Brower, 2002; Core Institute, 2005; Miller, 1997; NIAAA, 2002; Vicary & Karshin, 2002), driving under the influence, driving while intoxicated, and being arrested for public drunkenness (Core Institute, 2005; NIAAA, 2002).

In addition to the many negative personal consequences, students' drinking also adversely affects their peers who abstain from drinking or who do not drink heavily (Wechsler et al., 2002a, 2002b). Wechsler et al. (2002a) described the results from the Harvard School of Public Health College Alcohol Study [CAS], a survey administered biennially at the same 119 U.S. colleges and universities in 38 states from 1993 to 2001 (Wechsler et al., 2002a). Among other variables (i.e., students' alcohol, tobacco, and other drug use, lifestyles, and demographic and background characteristics), there were eight questions in the survey regarding student's experiences with the second-hand effects of their peers' drinking (Wechsler et al., 2002a). These negative second-hand effects included being insulted or humiliated, having studying or sleep interrupted, being subjected to unwanted sexual advances or sexual assaults, having a serious quarrel or argument, and being pushed, hit, or physically assaulted by a student who had been drinking (Wechsler et al., 2002a, 2002b). Indeed, Brower (2002) has suggested that college student drinking may be best understood as a community, rather than an individual, problem because it often results in property damage and in physical or sexual harm to others, and it prevents other students from doing well in school.

Summary

Because so many college students consume alcohol and a large percentage of these students drink heavily, and because research has shown drinking heavily to be associated with myriad negative outcomes for students, alcohol use is considered the number one health problem affecting college students (Brower, 2002; Vicary & Karshin, 2002; Wechsler et al., 2002a, 2002b), and the Surgeon General considers students' drinking a national concern (DHHS, 2000). Citing 1998 estimates, the Surgeon General has set an objective of cutting binge drinking rates in

half (39% to 20%) by 2010 (DHHS, 2000). Researchers have also been searching for interventions and protective factors that lower or prevent heavy drinking among students. A goal of this study is to advance the research on factors that protect against alcohol use among college students by investigating mechanisms whereby such factors reduce or buffer against alcohol use. One such protective factor is religiousness.

The Relationship between Religiousness and Alcohol Use

Definition and conceptualization of religiousness

Religiousness is “a search for [personal] significance in ways related to the sacred” (Pargament, 1999, p. 11). In other words, religiousness refers to the extent to which people derive their sense of self-worth and their life purpose, meaning, and direction from their beliefs about, and their relationship with, God or a Higher Power. The term “religiousness” is often used to describe an individual’s personal experience within an organized religion (Thoreson, Harris, & Oman, 2001). For instance when being assessed for religiousness, individuals may be asked how frequently they attend religious services, pray, meditate, or take Communion, all of which are behaviors understood within a specific religious framework.

Because religiousness describes an individual’s personal experience within a particular belief framework that is common to others, there is a temptation to focus on this common framework, but religiousness is really about the individual’s experience. Focus on the individual’s experience is also difficult to maintain because some religious acts may be personally meaningful but require, or are enriched by, the presence of other people. For instance, individuals may worship God through singing hymns by themselves, but may find this experience becomes more meaningful when done with others who share their beliefs. In defining religiousness, some authors have attempted to make a distinction between personal or private elements, such as praying and fasting, and institutional or public elements, such as attending religious services and reciting creeds as a congregation (Plante & Sherman, 2001), but the difference between personal/private and institutional/public acts is an artificial one and can become muddled. For instance, prayer, often done privately, can also be done publicly as part of a group. Though a Muslim may be kneeling in his or her bedroom alone to pray at a specific time of the day facing Mecca, he or she is praying simultaneously with millions of other Muslims, making personal prayer simultaneously communal. Moreover, the distinction between public and private religious acts is not important for understanding what religiousness is. What is important is that one’s personal experience relies on specific attitudes, beliefs, and behaviors shared within a specific religious group (Fetzer Institute/National Institute on Aging [NIA], 1999).

Because of the many ways people search for personal significance in ways related to the sacred, researchers have concluded that religiousness is a complex construct made up of many dimensions (Fetzer Institute/NIA, 1999; George, Larson, Koenig, & McCullough, 2000; Hackney & Sanders, 2003; Hill, et al., 2000; Kendler et al., 2003; Levin, 1996; Plante & Sherman, 2001; Salsman, Brown, Brechting, & Carlson, 2005; Seybold & Hill, 2001; Thoreson et al., 2001; Zinnbauer & Pargament, 2005; Zinnbauer, Pargament, & Scott, 1999). However, there is no consensus on what the dimensions are or how many there are (Koenig, McCullough, & Larson, 2001). For instance, Hackney & Sanders (2003), based on a meta-analysis of religiousness and mental health research, say there are three broad dimensions: institutional religion which comprises the social and behavioral aspects of religion, ideological religion which focuses on religious doctrines and beliefs, and personal devotion which focuses on individuals’ internalized devotion. On the other hand, Kendler et al. (2003) say there are seven dimensions. Their dimensions are general religiousness (level of concern with the sacred), social

religiousness (the degree to which one interacts with others of similar beliefs), involved God (beliefs about how one's deity interacts with the world), forgiveness (the degree one is caring, loving, and forgiving), God as judge (beliefs regarding God's judgment and punishment), unvengefulness (the degree to which one has attitudes of retaliation toward the world), and thankfulness (the degree to which one experiences thankfulness rather than anger toward God, Kendler et al., 2003). These are just two examples. There are at least six other ideas that have been advanced to reflect the multidimensionality of religiousness each with differing numbers and types of dimensions and with varying amounts of empirical support.

Noting the vast disparity in religiousness dimensions represented in the literature, and in an effort to bring greater clarity to this issue, Koenig et al. (2001) developed a list of 12 dimensions of the Judeo-Christian religious tradition by combining what they judged to be the most theoretically and methodologically sound attempts at identifying these dimensions. They describe these 12 dimensions as being "based on the work of behavioral scientists who have studied this area for the past 50 years" (Koenig et al., 2001, p. 23). Their dimensions are:

1. religious beliefs: whether one believes in God and how closely one's beliefs conform to established doctrine,
2. religious and denominational affiliation: the specific religion and/or denomination with which one identifies,
3. organizational religiousness: participation in church, synagogue, or temple activities,
4. nonorganizational religiousness: participation in private forms of religiousness such as prayer or meditation,
5. subjective religiousness: religion's importance in one's life,
6. religious commitment/motivation: the degree to and purpose for which one incorporates religious values, beliefs, and practices in everyday life,
7. religious quest: viewing religion as an endless process of probing and questioning generated by tension, contradictions, and tragedies in life and society,
8. religious experience: dramatic, spectacular, and bizarre religious experience such as conversion, mystical experiences, and healings,
9. religious well-being: one's feeling of having a personally meaningful, satisfying, and fulfilling relationship with God,
10. religious coping: using religious thoughts and behaviors to cope with or adapt to difficult life situations or stress,
11. religious knowledge: the amount of information one knows regarding the tenets or doctrines and history of one's faith, and
12. religious consequences: the degree to which individuals' actions toward the world around them conform to religious tenets (e.g., donating to charities, volunteering in the community).

Due to the thoroughness of Koenig et al.'s (2001) approach, their dimensional conceptualization will be used in this study.

Operationalizations of religiousness in alcohol literature

Despite the fact that religiousness is multidimensional, in the alcohol use literature, it is typically assessed with single items and operationalized in one of three ways: frequency of religious service attendance, importance of religion, or frequency of prayer. Measured using these operationalizations, religiousness tends to be negatively related to alcohol use (Booth & Martin, 1998; Brown, Parks, Zimmerman, & Phillips, 2001; Cochran, Wood, & Arneklev, 1994; Forthun, Bell, Peek, & Sun, 1999; Mason & Windle, 2002; Perkins, 1985; Wills, Yaeger, &

Sandy, 2003). Probably the most common operationalization is frequency of religious service attendance. Typically, this is assessed with a single question that either asks participants “how often do you attend religious services?” (e.g., Brown et al., 2001, p. 698), which provides a measure of typical service attendance, or by asking participants to report the number of times they attended a religious service in the past month (Cochran et al., 1994), which provides a measure of current service attendance. The consistent finding is that the more often adolescents and college students attend religious services the less likely they are to drink alcohol (Park, Bauer, & Oescher, 2001; Mason & Windle, 2002) and when they do drink those that attend services more frequently tend to consume less (Galen & Rogers, 2004; Mason & Windle, 2002) and are less likely to experience problems associated with their alcohol use (Brown et al., 2001; Mason & Windle, 2002).

Rating how important religion is in a person’s life, also called religious salience, is another popular way to measure religiousness in alcohol research. Typically assessed by asking “how important is religion in your life?” (e.g., Brown et al., 2001, p. 698) or “how important is your religion?” (e.g., Mason & Windle, 2002, p. 350), religious salience has been found to be negatively related to alcohol use (Park et al., 2001) and problems related to drinking (Brown et al., 2001; Perkins, 1985). The more salient religion is to adolescents and college students, the less frequently they drink and the fewer problems they have with alcohol. Assessed by asking how often one prays, frequency of prayer is another common way alcohol researchers have operationalized religiousness. Generally speaking, college students and adolescents who pray more frequently report consuming less alcohol (Galen & Rogers, 2004) and having fewer problems related to using alcohol (Brown et al., 2001).

Despite the consistency of these findings, the nature of the relationship between religiousness and alcohol use is far from clear. Although many researchers report a negative relationship between religiousness and alcohol use, some researchers (e.g., Patock-Peckham, Hutchinson, Cheong, & Nagoshi, 1998) have found that being high in religiousness is associated with greater alcohol use and more alcohol problems. Still other researchers (e.g., Templin & Martin, 1999) have reported that there is no relationship between religiousness and alcohol use. One explanation for these apparent inconsistencies is the possibility that there are other variables that are correlated with both religiousness and alcohol use that account for their association. It is possible that, in studies where these third variables are operative (though unmeasured), researchers find a relationship between religiousness and alcohol use whereas in other studies where these variables are absent, no (or even an inverse) relationship is found. Thus, one way to account for these apparent inconsistencies is to go beyond simple bivariate relationships to examine whether other variables may be influencing this relationship. Though research on third variables is limited, there is some research to suggest that religious affiliation (Patock-Peckham et al., 1997; Perkins, 1985) and gender (Bliss and Crown, 1994; Strawbridge, Shema, Cohen, & Kaplan, 2001; Templin & Martin, 1999) are two variables that might influence the relationship between religiousness and alcohol use and that taking these two variables into account might eliminate some of the inconsistencies in the literature.

Religious affiliation. To assess religious affiliation, research participants are asked to note with which organized religion (e.g., Protestant, Catholic, Muslim, Jewish) they identify if any (Patock-Peckham et al., 1997). This distinction is important because certain religious traditions tend to endorse more explicit proscriptions against alcohol use than others, which affects their members’ alcohol use (Galen & Rogers, 2004, Perkins, 1985). For example, Perkins (1985) found that Catholics and Protestants endorse using alcohol more than Jews. Patock-Peckham et

al. (1997) found that Catholics drank more alcohol and became inebriated more frequently than Protestants, and that Catholics in their study who endorsed higher levels of religiousness also reported more problems related to alcohol use. Thus, one reason for inconsistent findings may be that researchers have not taken religious affiliation into account. A study that examines the relationship between religiousness and alcohol use in a sample of participants who are active in a religion that strictly prohibits alcohol use may yield different results when compared to a study conducted with a sample of participants who are active in a religion that endorses alcohol use. Using samples from different religious affiliations that vary in their degree of proscriptiveness about alcohol use may change the magnitude of the association between religiousness and alcohol use, a problem that might produce results that appear inconsistent. To address this problem in the present study, I included religious affiliation as a control variable in order to better estimate the relationship between religiousness and alcohol use.

Gender. Several studies have reported a link between gender and religiousness and between gender and alcohol use (Bliss and Crown, 1994; Strawbridge et al., 2001; Templin & Martin, 1999). Using longitudinal data, Strawbridge et al. (2001) reported that women who attended religious services frequently were more likely to stop drinking heavily than men frequently attending religious services. In a population of 277 Roman Catholic college students, Templin and Martin (1999) found that women who were higher in religiousness reported less alcohol use and fewer problems related to alcohol use, whereas religiousness did not affect alcohol use and problems related to alcohol use for men. In a study conducted using 143 college students, Bliss and Crown (1994) found that women who said their religion was important to them (religious salience) reported using less alcohol, but men who said their religion was important to them reported using more alcohol. Likewise, gender is associated with differences in rates of alcohol use with males reporting drinking more frequently than females (Patock-Peckham et al., 1997). Thus, another reason for inconsistent findings may be that researchers have not taken gender into account. Since research samples tend to be unbalanced with regard to gender, failing to take this variable into account when examining the relationship between religiousness and alcohol use might lead to inconsistent results across studies. To address this problem in the present study, I included gender as a study variable in order to better estimate the relationship between religiousness and alcohol use.

Limitations in the Religiousness and Alcohol Use Literature

Besides failing to take third variables into account, there are two other major limitations that have slowed the progress of research on the relationship between religiousness and alcohol use. One of those has to do with how religiousness has been operationalized and the other has to do with the fact that most research in this area is atheoretical and involves little model or theory testing.

Religiousness is poorly operationalized. One limitation is that researchers typically operationalize religiousness in simplistic ways, using single-item measures to assess religiousness or describing religiousness after assessing a single dimension (Brown, Salsman, Brechting, & Carlson, in press). Using a single-item measure is problematic because single items have low reliability, and operationalizing religiousness using a single dimension fails to sufficiently account for the potential complexity in how multiple dimensions of religiousness may relate to alcohol use (Corwyn & Benda, 2000; Salsman et al., 2005). To illustrate why this might be problematic, consider the most popular operationalization of religiousness in the alcohol use literature, frequency of religious service attendance. This operationalization, which provides a clear, objective, face-valid measure of religiousness, can be motivated by goals other

than a search for significance in ways related to the sacred. This is especially true for adolescents who may attend church because they are forced or bribed by their parents to do so. Depending on the context, adolescents and college students may also be motivated to attend religious services for social popularity purposes. Had researchers also assessed religiousness using another dimension of religiousness, subjective religiousness for instance, they might have found a different association between religiousness and alcohol use. To address these limitations in the present study, a multidimensional conceptualization and assessment of religiousness was used. Additionally, scales were used, rather than single items, to increase the reliability of the results. Specifically, I used scales that measure two of Koenig et al.'s (2001) dimensions: religious commitment/motivation and religious consequences.

Religious commitment/motivation is a measure of how thoroughly a person's religion has permeated his or her life (Koenig et al., 2001). Individuals that describe themselves as religious but score low in religious commitment/motivation have been criticized as hypocritical. For instance, some Christians have been characterized as religious on Sunday but as unaffected by their religion during the rest of the week. However, persons high in religious commitment/motivation have thoroughly incorporated their religious values, beliefs, and practices into their daily lives. These persons would be more likely to make parenting decisions based on religious values, vote according to religious convictions, or pray for the victim in a passing ambulance. This dimension is likely related to alcohol use because, though religions differ on the extent to which alcohol use is proscribed, most religions discourage drinking heavily. Thus, individuals high in religious commitment/motivation should be less likely to drink heavily than individuals low in this construct, which has been found in previous studies (e.g., Galen & Rogers, 2004). Also, measuring religiousness with dimensions assessing personal devotion, such as religious commitment/motivation, will often result in larger effects than for institutional or ideological, belief-focused dimensions (Hackney & Sanders, 2003).

Religious consequences is the other religiousness dimension that was assessed in this study in an effort to capture "love of neighbor" aspects of faith (Benson, Donahue, & Erickson, 1993, p. 4). It focuses on prosocial behaviors that align with the religious tenets of an individual's faith (Koenig et al., 2001) such as giving money to the church or other nonprofit organizations, volunteering for church responsibilities such as ushering or teaching a class, helping the poor, and providing relief after disasters. In fact, Benson et al. (1993) call into question the maturity of, and commitment to, individuals' faiths if these faiths do not affect their behaviors toward those around them. Religious consequences might relate to alcohol use as individuals high in this aspect of religiousness could be less likely than individuals low in this aspect to drink heavily out of concern that this might lead them to harm (e.g., verbally or physically assaulting someone) instead of help others. Thus, religious commitment/motivation assesses how committed people are to their faith and religious consequences assesses the degree to which those commitments translate into actual behavior. Together these dimensions provide a more holistic approach to assessing religiousness than using a single item or dimension of religiousness.

The need for research that tests theoretical models. A second limitation is that most researchers focus on replicating a bivariate association between religiousness and alcohol use rather than testing models that explain how, for whom, and under what conditions religiousness is related to alcohol use (Hill, 2005; Thoreson & Harris, 2002). Hill (2005) noted that much of what has been learned about religiousness has been through studies that are focused on other research questions but include a religiousness variable as an "add-on" (p. 47), resulting in a

proliferation of religiousness research that has little, if any, theoretical basis. For instance, Fenzel (2005) included a religiousness measure as one of 12 predictors in a multivariate analysis of heavy alcohol use among college students. These indicators are rarely conceptualized in terms of dimensions of religiousness, and are almost never related back to a larger, multidimensional framework of religiousness. Different dimensions of religiousness may relate to alcohol use and alcohol problems differently, but it is unclear how because researchers are not testing these pathways. An important aspect of this study was elucidating the relationship between religiousness and alcohol use variables through theory testing.

The theoretical model that I tested in this study was one proposed by Koenig and his colleagues (2001). They conducted a critical, comprehensive, and systematic review of the literature on the relationship between religion and health. In their review, which included more than 1,200 studies and 400 research reviews conducted during the 20th century, they examined both positive and negative effects of religion across the lifespan. On the basis of this review, they developed a hypothetical model to explain how religion might impact health. Because the vast majority of the studies in their review were cross-sectional, it is not possible to know the underlying causal mechanisms for religion's effect on health. However, their model is designed to represent graphically what the extant literature suggests might be the pathways. For this reason they describe their theoretical model as being hypothetical, and it has not yet been tested empirically.

As can be seen in Figure 1.1, Koenig et al. (2001) propose that the effect of religiousness on alcohol use is mediated through mental health. As one example of how this might work, consider the case in which alcohol is used to cope with stress or distress. In this instance, religious beliefs and activities might operate to reduce alcohol use because they promote greater well-being, hope, or optimism. This improved, more optimistic outlook may in turn decrease alcohol use. Consequently, one would find lower rates of alcohol use among those who are more religious than the general population. Thus, in addition to directly and independently reducing alcohol use, this model proposes that religiousness may also indirectly affect alcohol use by increasing positive mental health or, conversely, by decreasing negative mental health. On the other hand, religious beliefs that create psychological distress (e.g., instilling anxiety, arousing guilt, discouraging appropriate psychological care, etc.) would have the opposite effect of increasing alcohol use. In this case, one would expect to find higher rates of alcohol use among those who are more religious because the psychic cost of such religious beliefs would lower the person's self-regulatory capacity which would result in greater alcohol use. Thus, in the model proposed by Koenig et al. (2001), the effect of religiousness on alcohol use – whether to buffer against it or to enhance it – is hypothesized to flow through mental health. Considering the specific dimensions of religiousness assessed in this study, religious commitment/motivation and religious consequences, optimism may be positively related to both; therefore, both dimensions may follow the same pattern in predicting alcohol use. That is both dimensions may work through optimism to affect alcohol use.

Although Koenig et al. (2001) hypothesized a mediational model to explain the role mental health might play in influencing the relationship between religiousness and alcohol use, it is possible that this relationship might be a moderational one. In other words, as shown in Figure 1.2, it is possible that religiousness interacts with mental health to affect alcohol use. For example, consider optimism, which is an individual's belief that good, not bad, will generally happen to him or her (Scheier & Carver, 1985), and religious commitment/motivation. Since both religious commitment/motivation and optimism protect individuals from alcohol use

(Koenig et al., 2001), individuals high in religious commitment/motivation and optimism would probably be less likely to consume alcohol than their peers, and individuals low in both of these qualities would probably be more likely to consume alcohol. What is more difficult to predict are the individuals who are low in one of these variables yet high in the other. Individuals high in optimism but low in religious commitment/motivation would probably be unlikely to drink heavily because individuals high in optimism do not tend to drink, especially to cope with their problems, as much as individuals low in optimism (Harju & Bolen, 1998). However, individuals high in religious commitment/motivation and low in optimism may be more likely to use alcohol and to use it heavily. As mentioned above, individuals high in religious commitment/motivation have many beliefs (e.g., a loving God, eternal life) that would likely provide individuals with positive expectations for their futures; however, individuals high in religious commitment/motivation but low in optimism seem to be indicating that though they believe strongly in a loving God, they do not expect good things to happen to them. These beliefs seem dissonant, which might increase distress and lead individuals to turn to alcohol to cope with these conflicting beliefs. If these beliefs are not dissonant, individuals may believe that God exists but refuses or is unable to provide good in their lives, which could also produce distress and lead them to turn to alcohol to cope. If religious commitment/motivation and optimism interacted in these ways, this aspect of mental health would be moderating the relationship between religious commitment/motivation and alcohol.

Now, consider the example of optimism and religious consequences, which may not interact in predicting alcohol use. Unlike religious commitment/motivation, individuals may be high in religious consequences and low in optimism without holding dissonant beliefs. Optimism might be related to religious consequences for some in that when individuals help others they might expect better things to happen to them in their futures; however, while some individuals might have increased optimism due to their prosocial behaviors, others may not expect their futures to be affected by these helping behaviors. For instance, a Christian who volunteers to work with mentally challenged adults might believe that this behavior is fulfilling her religious convictions but that it is unrelated to her beliefs that good rather than bad will happen to her in the future. In this case, high religious consequences and low optimism do not seem dissonant and religious consequences may act as a buffer against heavy alcohol use for this individual. Therefore, religious consequences and optimism may be acting independently in predicting alcohol use.

The Relationships between Optimism and Religiousness and Optimism and Alcohol Use

In this study both moderation and mediation were tested and optimism was the aspect of mental health that was examined. Optimism is relatively stable across time and situation (Scheier & Carver, 1985) and is, therefore, considered a trait-like factor (Harju & Bolen, 1998). Optimism has been associated with numerous health and mental health benefits such as increased self-esteem (Majer, Jason, Ferrari, Olson, & North, 2002; Scheier & Carver, 1985), increased life-satisfaction (Harju & Bolen, 1998), decreased stress (Harju & Bolen, 1998), decreased alcohol use (Carvajal, Evans, Nash, & Getz, 2002), and even quicker recovery from surgery (Chang & Sanna, 2003).

I chose optimism as the aspect of mental health to be considered because many religious beliefs promote optimism and positive thinking. Koenig et al.'s (2001) review revealed that 80% of studies reported a positive association between religiousness and greater hope or optimism about the future. For example, Plante, Yancey, Sherman, and Guertin (2000) found college students high in religious faith were also more optimistic, and Scheier, Carver, and Bridges

(1994) found optimism to be positively correlated with turning to religion to cope with a problem. Indeed, none of the studies reviewed by Koenig et al. (2001) showed that religious people are less optimistic than nonreligious people.

Specifically, optimism may be related to religious commitment/motivation, one of the religiousness dimensions proposed in this study. The scriptures of Judeo-Christian religions have teachings and principles regarding how its followers should live their lives, and they note regularly that those who truly follow God will be blessed. Thus, individuals high in religious commitment/motivation, that is individuals whose religious principles permeate their lives, may expect increased positive consequences because of this. These individuals may anticipate God's direct blessings for following his scriptures or, less directly, increased meaning and purpose in the areas of their lives that have been influenced by their religious beliefs. For instance, individuals who considered their marriage sanctified by God reported higher levels of marital satisfaction and reduced divorce rates (Seybold & Hill, 2001; Thoreson et al., 2001).

Also, optimism might be related to religious consequences, the other dimension of religiousness proposed in this study, in three ways. First, like individuals high in religious commitment/motivation, individuals high in religious consequences may expect to benefit from being obedient to the tenets of their religions. The scriptures of Judeo-Christian religions teach principles related to religious consequences, namely, that the followers of these religions should treat others kindly. For instance, Jewish law instructs its followers to 'love your neighbor as yourself,' which was a command echoed and expanded by Jesus. Individuals high in religious consequences may expect God to bless them for obeying his teachings. Second, individuals high in religious consequences may behave in ways that have added, tangible benefits. As these individuals take care of others in need, they may be improving their relationships with those they have helped and increasing their own expectation that they would be helped in the future, if needed. For instance, members of an individual's religious community may be more likely to provide him or her help if he or she has made dinner for a friend whose family member died or mowed a member's yard who was recovering from surgery. Finally, individuals high in religious consequences may benefit from helping others who will probably never be able to return the favor, such as, helping at a homeless shelter or sending money for aid relief overseas. Through these actions, individuals may gain an increased belief that God will provide for them in practical, tangible ways in the same manner he is using them to provide for others. Therefore, optimism may be positively related to religious commitment/motivation and religious consequences for several reasons.

I also chose optimism because it tends to be negatively correlated with alcohol use among adolescents and college students (Carvajal, et al., 2002). For example, when asked about their futures, frequent adolescent substance users were less optimistic than their abstaining peers (Schmid, 1998). Also, optimism was negatively associated with using alcohol to cope with problems among college students (Harju & Bolen, 1998).

Purpose of the Study

In sum, alcohol use, especially heavy alcohol use, causes serious academic, health, and legal consequences among college students. Many of these students take part in risky and potentially harmful behaviors, putting not only themselves but their nondrinking peers in danger. Since alcohol use is so problematic among students, variables that reduce alcohol use can have a profound impact on student health and mental health on college campuses. Religiousness tends to act as a buffer against alcohol use; however, it is unclear how and under what circumstances it

leads to this result. Thus one goal of the proposed study is to clarify the nature of the relationship between religiousness and alcohol use in several ways.

First, since religiousness is a complex, multidimensional construct, I investigated two different dimensions of religiousness— i.e., religious commitment/motivation and religious consequences— to determine how they are similarly or differentially associated with alcohol use. It is possible that different aspects of religiousness may predict alcohol use better than others. Second, I measured these two dimensions of religiousness using multi-item measures with sound psychometric properties. My aim was to address the common problems that result from the use of single-item operationalizations of the religiousness construct. Third, moving beyond the bivariate relationship between religiousness and alcohol use, I tested a model that purports to explain *how* religiousness influences alcohol use. Specifically, I tested Koenig et al.'s (2001) model which postulates that mental health variables explain this relationship. The aspect of mental health I examined is optimism. Salsman et al. (2005) found optimism was positively correlated with religious commitment/motivation in a college student sample, but that it fully mediated the relationship between religiousness and psychological distress and partially mediated the relationship between religiousness and life satisfaction (Salsman et al., 2005). This provides support for Koenig et al.'s (2001) model and indicates that optimism acts as a mediator between religiousness and important mental health outcomes. Perhaps optimism mediates the relationship between religiousness and alcohol use as well. It seems also possible that religiousness and optimism may interact with each other, providing an additive effect in predicting alcohol use. Thus, although Koenig et al. (2001) propose a mediational model, I investigated moderation as well. I hypothesized that religiousness would be negatively related to alcohol use, based on the model of Koenig et al. (2001), and that optimism will partially mediate this relationship. Also, as outlined above, I hypothesized that optimism will moderate the relationship between religious commitment/motivation and alcohol use, but that religious consequences would not interact with optimism in predicting alcohol use.

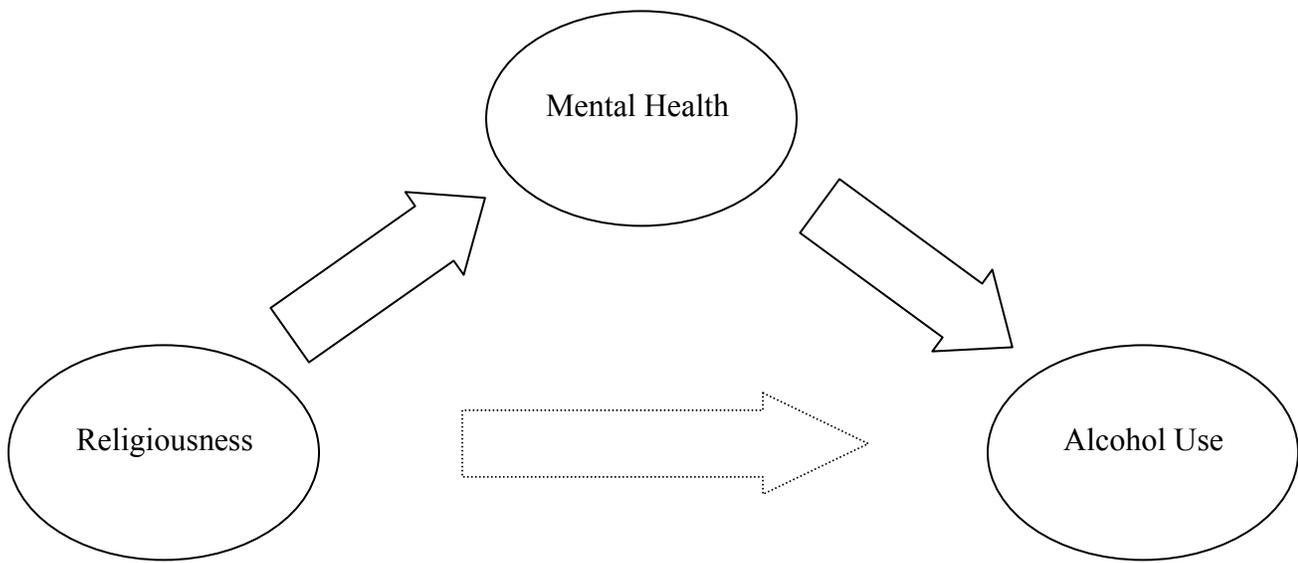


Figure 1.1. Koenig et al.'s (2001) model suggests the relationship between religiousness and alcohol use may be mediated by mental health.

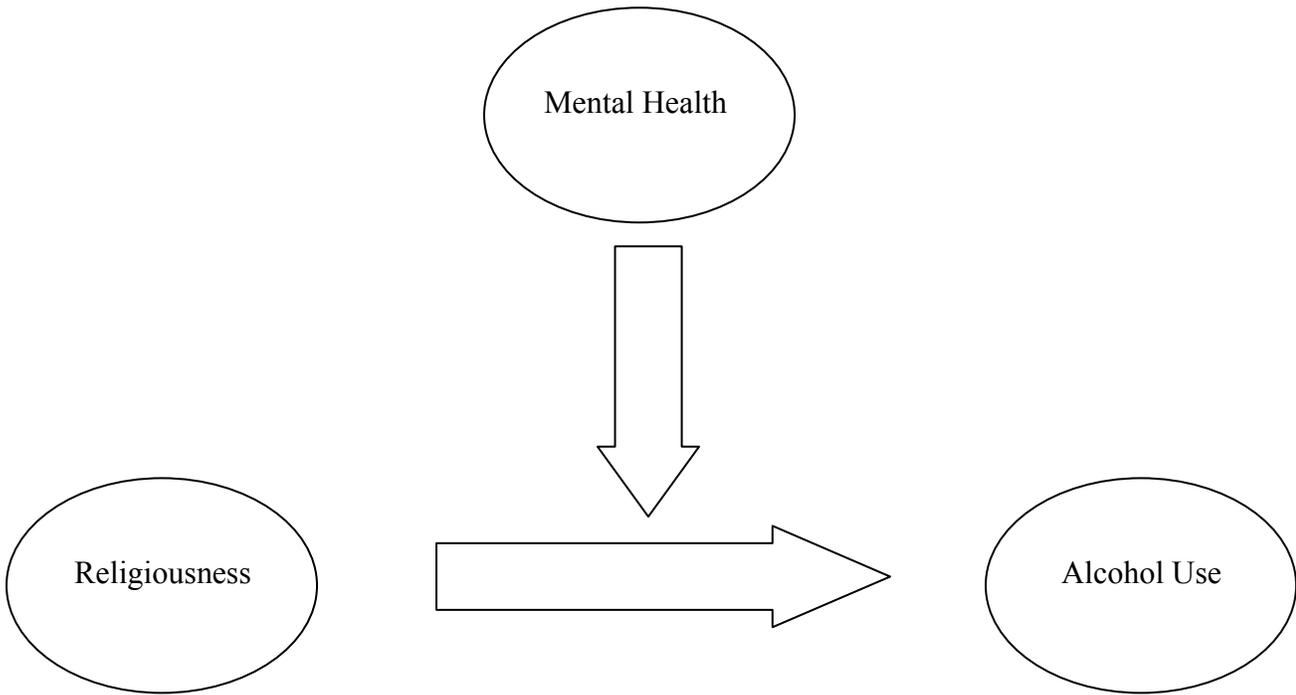


Figure 1.2. The relationship between religiousness and alcohol use may be moderated by mental health.

Chapter 2

Methodology

Participants

I used archival data collected in the fall of 2002, spring of 2003, and fall of 2003, from 376 undergraduate students attending the University of Kentucky (284 females, 88 males, and 4 did not report gender) who were participating in a study investigating the relationship among religiousness, spirituality, and health. Of the participants, 14% were first-year students ($n = 56$), 28% were second-year students ($n = 106$), 25% were third-year students ($n = 95$), 27% were fourth-year students ($n = 100$), 4% were college graduates ($n = 14$), and 1% did not respond to this item ($n = 2$). Participants ranged in age from 17 to 46, with a mean age of 20.44 ($SD = 3.22$). Eighty-six percent of the participants were Caucasian ($n = 323$), 10% were African American ($n = 37$), 1% were Asian American ($n = 3$), 1% were Hispanic ($n = 3$), 2% reported other ethnic backgrounds ($n = 8$), and 1% did not respond to this item ($n = 2$). Concerning religious affiliation, 54% were Protestant ($n = 201$), 29% were Catholic ($n = 110$), 1% were Buddhist ($n = 3$), 0.3% were Hindu ($n = 1$), 0.3% were Muslim ($n = 1$), 0.3% were Jewish ($n = 1$), 3% reported other religious affiliations ($n = 12$), 12% reported no religious affiliation ($n = 44$), and 1% did not respond to this item ($n = 3$).

A subset of this data set was used. Since this study is assessing college students, all college graduates and participants who failed to report their years of education were removed from the sample. Also, ethnicity (Brown et al., 2001) and religious affiliation (e.g., Galen & Rogers, 2004) have been cited as significantly affecting the relationship between religiousness and alcohol use; however, this data set was so largely Caucasian (86%) and either Protestant or Catholic (83%) that analyses could not be generalized to, nor run separately for, other ethnic and religious groups. Therefore, only participants that identified themselves as Caucasian and either Protestant or Catholic were included. Thus, the data used in this study was comprised of 262 Caucasian participants. Of these, 202 were females, 58 were male, and two participants did not report gender. Fifteen percent were first-year students ($n = 40$), 32% were second-year students ($n = 85$), 27% were third-year students ($n = 70$), and 26% were fourth-year students ($n = 67$). Participants ranged in age from 18 to 46, with a mean age of 19.95 ($SD = 2.40$). Sixty-two percent of participants were Protestant ($n = 163$), and 38% of participants were Catholic ($n = 99$).

Measures

Demographics. I used age, gender, ethnic background, and level of education as variables to describe the participants, and I used gender and religious affiliation in my analyses. All of these demographic variables were assessed using single items. Participants were given a blank to fill in their age. The other demographic variables required participants to choose from response options. The item assessing ethnic background read, "Which ethnic group to you most identify with?" Response options included "African American," "Asian American," "Caucasian," "Hispanic," "Native American," and "Other (please specify)." If participants endorsed "Other," they were given a blank space to identify their specific ethnic group. Regarding level of education, participants were asked, "How many years of education have you completed?" There were eight response options ranging from "High school diploma/GED" to "PhD/MD/JD." Regarding religious affiliation, participants were asked, "What is your current religious preference?" Response options included "Buddhism," "Catholicism," "Hinduism," "Islam,"

“Judaism,” “Protestantism, which specific denomination?,” “Other,” and “None.” If participants endorsed “Protestantism” or “Other,” they were given a blank space to identify their specific denomination or religion, respectively.

Alcohol use. I measured three types of alcohol use: average quantity of alcohol use per setting in the past year, frequency of alcohol use in the past year, and problems with or objections to alcohol use. I assessed average quantity of alcohol use with the question: “In the last year, when you drank alcohol, how many drinks did you consume, on the average, on one occasion?” To answer this question, participants chose from a range of 14 response options including: “I didn’t drink any alcohol,” “5 drinks,” and “More than 25 drinks.” I assessed frequency of alcohol use with the question: “In the last year, how often did you drink alcohol on the average?” To answer this question, participants chose from a range of 18 response options including: “I didn’t drink any alcohol,” “Twice a month,” and “Four or more times a day.” I assessed problems with or objections to alcohol use with the question: “Have you ever experienced any problems or objections to your drinking?” To answer this question, participants chose from a range of five response options including: “I do not drink any alcohol,” “Few objections or problems,” and “Frequent objections or problems.”

In order to provide a more reliable estimate of alcohol use, I combined the three alcohol use items, assessing frequency, quantity, and problems with alcohol use, into a composite variable by converting each of these items into a z-score and then averaging them together.

Religiousness. I assessed two aspects of religiousness: religious commitment/motivation and religious consequences.

Religious commitment/motivation. I assessed religious commitment/motivation using two measures, the intrinsic subscale of the Intrinsic/Extrinsic Scale-Revised (Gorsuch & McPherson, 1989, Appendix A) and the vertical subscale of the 12-item short form of the Faith Maturity Scale (FMS12-V, Benson et al., 2003, Appendix B). The intrinsic subscale is comprised of eight items that assess sincere interest in religion for its own end, instead of interest for ulterior motives such as self-justification or social contacts. Sample items are: “My whole approach to life is based on my religion,” and “It is important to me to spend time in private thought and prayer.” Responses were scored using a five-point continuum ranging from one (“Strongly Disagree”) to five (“Strongly Agree”). Cronbach’s alpha for the intrinsic scale is .81 in this data set. The item mean for the Intrinsic Religiousness Scale-Revised for this sample ($M = 3.66$, $SD = .74$) is significantly lower, $t(1,029) = 21.88$, $p < .01$ (two-tailed), than that of the reported mean by Gorsuch and McPherson (1989). This may be due to the populations sampled as Gorsuch and McPherson (1989) included students from religious colleges while the data for this study comes exclusively from a secular university.

The FMS12-V, the other measure of religious commitment/motivation, is comprised of eight items assessing an individual’s personal relationship with God and personal transformation from that relationship. Sample items include: “I have a real sense that God is guiding me,” and “My life is committed to the God of my understanding.” Responses were scored using a seven-point continuum from one (“Never true”) to seven (“Always true”). Cronbach’s alpha for the FMS12-V is .92 for the current data set. Piedmont and Nelson (2001), who also used this measure in a college sample, reported means by gender. For this scale, the mean-item difference for the vertical scale for males was statistically significant, $t(554) = 3.94$, $p < .01$ (two-tailed), with males in our study scoring higher ($M = 4.15$, $SD = 1.37$). For females, the mean-item difference for the vertical scale was also statistically significant, $t(1,487) = 6.86$, $p < .01$ (two-tailed), with females in our study scoring higher ($M = 4.54$, $SD = 1.37$).

Unfortunately, Piedmont and Nelson (2001) do not provide sufficient participant information to allow for intelligent speculation regarding these discrepancies between sample means.

Since religious commitment/motivation is assessed using two scales, I created a composite variable to represent this dimension of religiousness by converting each scale into a z-score and then averaging them together.

Religious consequences. I assessed religious consequences using the horizontal subscale of the 12-item short form of the Faith Maturity Scale (FMS12-H, Appendix C). This subscale is comprised of four items that assess “love-of-neighbor” aspects of faith (Benson et al., 1993, p. 4) and focus on an individual’s actions toward others regarding social service and social justice. Sample items include: “I give a significant portion of time and money to help other people,” and “I feel a deep sense of responsibility for reducing pain and suffering in the world.” Responses were scored using a seven-point continuum ranging from one (“Never true”) to seven (“Always true”). Cronbach’s alpha was .79 for the current data set. Both males ($M = 3.51, SD = 1.13$), $t(554) = .11, p > .05$ (two-tailed), and females ($M = 3.87, SD = 1.14$), $t(1,487) = 1.15, p > .05$ (two-tailed), scored comparably in this sample to participants in Piedmont and Nelson’s (2001) sample.

Optimism. I assessed optimism using the Life Orientation Test-Revised (LOT-R, Scheier, Carver, & Bridges, 1994, Appendix C), a six-item measure of dispositional optimism. Sample items include: “In uncertain times, I usually expect the best,” and “Overall, I expect more good things to happen to me than bad.” Responses were scored using a five-point continuum ranging from one (“strongly disagree”) to five (“strongly agree”). Three of the six items are reverse scored. Cronbach’s alpha was .85 for the current data set. The mean for the Life Orientation Scale-Revised from this sample ($M = 3.47, SD = .83$) was significantly higher, $t(2317) = 5.35, p < .01$ (two-tailed), than the reported means of Scheier et al. (1994) for a college student sample

Procedure

Participants for this self-report study were recruited through undergraduate psychology courses (i.e., general psychology, developmental psychology, and psychology of adjustment). The study was announced in classes by the instructors of the courses, and participants were given extra credit toward their coursework for voluntarily completing the measures. Students who opted not to participate in the study were given an alternative extra credit assignment. Participants signed informed consent forms and were given an anonymous questionnaire in order to preserve confidentiality. Upon returning their completed questionnaire, participants were thanked and given class credit.

Chapter 3

Results

Missing Data

While 262 participants completed surveys during this data collection, some participants skipped items assessing this study's research variables. Two participants skipped the item asking them to indicate their gender. No participants skipped items on the intrinsic religiousness scale. Nine participants each skipped a single item on the vertical scale of the FMS-12, and 18 participants each skipped an item on the horizontal scale of the FMS-12. Three participants each skipped one item on the LOT-R. Because of the low number of missing items on each scale, missing items were replaced using mean-item substitution. Mean-item values for the vertical scale of the FMS-12 were computed separately from mean-item values for the horizontal scale of the FMS-12 according to the original item composition of these scales as described by Benson et al. (1993). One participant skipped the item assessing frequency of alcohol use. This participant's data was not included in all analyses using the alcohol use composite variable. No items were skipped assessing the quantity and problems associated with alcohol use variables.

Results for Factor Analysis

Before running substantive analyses, I conducted a factor analysis of the faith maturity scale because there is some disagreement in the literature about the factor structure of this measure. For example, Piedmont and Nelson (2001), in an exploratory factor analysis using principal components analysis with a varimax rotation in a sample of 1,786 college students, found two factors: a vertical factor and a horizontal factor. Benson et al. (1993), using a sample of Protestant adults, reported a single-factor solution but failed to disclose their data extraction approach. As both of these studies found different factor structures, I ran an exploratory factor analysis to determine the appropriate factor structure for my data. I ran a principal factors procedure in SPSS. As the factors of the FMS-12 are considered conceptually distinct yet correlated, I chose a promax rotation. I used a .40 cutoff which was recommended by Fabrigar, Wegener, MacCullum, and Strahan (1999). Items loading on more than one factor with a loading difference of .10 or greater were assigned to the factor on which they had the highest loading. After examining eigenvalues and a scree plot, I determined that a two-factor solution best fit these data.

Table 3.1 shows factor loadings for each item. Eight items loaded on the first factor, which I am calling the Vertical factor. Three items loaded on the second, which I am calling the Horizontal factor. One item ("I am spiritually moved by the beauty of God's creation") loaded on both factors; however, its loading of .54 on the Horizontal factor compared to .40 on the Vertical factor exceeds the .10 loading difference indicated above. Therefore, this item was assigned to the Horizontal factor so that eight items are on the Vertical factor and four on the Horizontal factor.

In general, items on the Vertical factor primarily assess an individual's relationship with God and an individual's commitment/motivation toward his or her faith (e.g., "I seek out opportunities to help me grow spiritually," and "I have a real sense that God is guiding me"). However, three of the items that loaded on this factor assess whether an individual's faith affects his or her interpersonal relationships (e.g., "I help others with their religious questions and struggles," "I feel God's presence in my relationship with other people," and "I talk with other

people about my faith”). This interpersonal component does not corroborate Benson et al.’s (1993) original formulation of the Vertical scale of faith maturity. According to Benson et al. (1993), this interpersonal dimension, which assesses the effects of faith on one’s relationships with others, is a component of the Horizontal scale. However, the results of the factor analysis conducted in this study suggest the opposite.

The items that loaded on the Horizontal factor focus on helping others (e.g., “I feel a deep sense of responsibility for reducing pain and suffering in the world,” and “I give a significant portion of my time and money to help other people”) but also includes the item “I am spiritually moved by the beauty of God’s creation.” It seems that the Horizontal factor that emerged in this study, unlike that originally proposed by Benson et al. (1993), is a measure of larger, more general social concern. Unlike what Benson et al. (1993) found, the Horizontal factor in this study does not seem to be related to an individual’s immediate interpersonal relationships; such relationships were more associated with the strength of an individual’s relationship with God as measured by the Vertical factor that emerged.

Based on these factor analytic results, the religious consequences variable was created by summing the items that loaded on the Horizontal factor in this study. Because the religious commitment/motivation variable is a composite of the vertical scale and the Intrinsic Religiousness Scale-Revised (Gorsuch & McPherson, 1989), I summed the items on the vertical factor, converted the sums into a z-score for each participant, and averaged them with the z-scores of the summed items on the intrinsic religiousness scale.

Descriptive Statistics

I ran basic descriptive analyses on all religiousness, optimism, and alcohol use study variables. Table 3.2 provides the means and standard deviations reported by item for each construct for males, females, and all participants together. Religious commitment/motivation is a composite variable, created by combining scores on the intrinsic religiousness and vertical scales. On the intrinsic religiousness scale, a mean of 3.66 ($SD = .74$) indicates participants tended to respond to items assessing their commitment to their religion, such as “I enjoy reading about my religion,” using response options “I’m not sure” (option three) and “I tend to agree” (option four) most regularly. On the vertical scale, participants’ mean of 4.44 ($SD = 1.38$) indicates they tended to respond to items assessing their relationships with God (e.g., my life is committed to the God of my understanding) using response options “sometimes true” (option four) or “often true” (option five) most regularly. Regarding religious consequences, participants’ mean item score of 3.80 ($SD = 1.14$) indicates they tended to respond most often using response option three or four when endorsing items such as “I give a significant portion of time and money to help other people” as “true once in a while” (option three) or “sometimes true” (option four) for them. Females ($M = 3.87$, $SD = 1.14$) reported significantly higher levels of religious consequences than males ($M = 3.51$, $SD = 1.13$), $t(257) = 2.15$, $p < .05$. Participants responded, on average, between response options three (neutral) and four (agree) in regards to items endorsing optimism such as “I’m always optimistic about my future.” Regarding frequency of alcohol use, participants’ mean score of 5.89 ($SD = 3.51$) indicates they tend to drink alcohol between “once a month” and “twice a month.” Males and females drank alcohol equally frequently, $t(257) = 1.05$, $p > .05$, but males drank significantly more alcohol than did females, $t(257) = 3.81$, $p < .01$. Males reported consuming between “6 drinks” and “7-8 drinks” while females reported consuming between “3 drinks” and “4 drinks” on average. No statistically significant gender differences were found regarding problems related to alcohol use. A mean of 1.46 ($SD = .85$) indicates participants report “No objections or problems” or “Few objections or

problems” regarding their drinking.

Intercorrelations

Table 3.3 presents Pearson correlations for each study variable. Religious commitment/motivation and religious consequences were positively associated. As expected, both of these religiousness dimensions were positively associated with optimism and negatively associated with alcohol use; however, surprisingly, optimism was unrelated to alcohol use. Also, significant gender differences were found for religious commitment/motivation and religious consequences with female participants rating higher on these variables. In other words, women reported being more committed to God and their religious beliefs and engaging in more prosocial behaviors because of their religious beliefs than did men. Regarding religious affiliation, Protestants were likely to be older, indicate higher levels of commitment to their religion, and drink less heavily than Catholic participants.

Testing for Mediation

According to Baron and Kenny (1986), three preconditions must be met for mediation to occur. First, the independent variable must be related to the mediator variable. As shown in Table 3.3, both religious commitment/motivation and religious consequences are correlated with optimism; therefore, this precondition is met. Second, the independent variables must be related to the dependent variable. Table 3.3 also shows that both religious commitment/motivation and religious consequences are correlated with alcohol use indicating that the second precondition of mediation is met. Third, the mediator variable must be associated with the dependent variable. As seen in Table 3.3, optimism is not significantly correlated with alcohol use in this sample; therefore, this precondition of mediation is not met. Since the third precondition is not met in this data, optimism cannot mediate the relationship between either dimension of religiousness and alcohol use.

Although the preconditions for mediation were not met, I ran mediation analyses anyway as these analyses may elucidate patterns in the data, such as suppression, that do not require the same preconditions as mediation (Cohen et al., 2003). Suppression occurs when the inclusion of a third variable increases the strength of the relationship between an independent and a dependent variable by a statistically significant amount. In other words, in suppression, it is possible for the third variable to significantly influence the relationship between an independent and dependent variable even though that third variable was not initially significantly related to the dependent variable. Whereas in mediation, the third variable *decreases* the relationship between the independent and dependent variables, in suppression the third variable *increases* the relationship. Thus, it is possible that optimism may act as a suppressor variable to influence the relationship between religious consequences and alcohol use and between religious commitment/motivation and alcohol use even though the bivariate relationship between optimism and alcohol use was not statistically significant.

To test whether optimism was acting as a suppressor in these relationships, I ran mediation analyses using the procedures outlined by Baron and Kenny (1986). That is, I regressed alcohol use on religiousness, optimism on religiousness, and finally, alcohol use on religiousness and optimism. Because I hypothesized that gender was an important moderator variable to consider when examining the relationships among religiousness and alcohol use variables, I ran the above described suppression analyses using gender as a dichotomous moderator variable. In other words, consistent with the procedures outlined by Baron and Kenny

(1986), I ran the mediation analyses separately for males and females. Because of this, religiousness variables and optimism were centered separately for each gender for these analyses.

Results of the suppression analyses revealed that optimism as a predictor of alcohol use did not produce statistically significant levels of suppression for either religiousness variable for males nor for females (see Figures 3.1 through 3.4). Therefore, these analyses provide no new information beyond the intercorrelations presented in Table 3.3.

Testing for Moderation

Although the theoretical model outlined by Koenig et al. (2001) postulated a mediational relationship between religiousness, mental health, and substance use, I believed that it was possible that the relationship may be moderational as well. Specifically, I hypothesized that optimism and religious commitment/motivation may interact in the prediction of alcohol use such that high levels of religious commitment/motivation and optimism would be associated with lower alcohol use, low levels of both of these variables would be associated with higher alcohol use, high optimism and low religious commitment/motivation would be associated with lower alcohol use, and low optimism and high religious commitment/motivation would be associated with higher alcohol use. I also hypothesized that optimism and religious consequences would not interact in predicting alcohol use.

To test moderation, I ran hierarchical multiple regression analyses separately for religious consequences and religious commitment/motivation. In the first step, alcohol use was regressed on gender, religiousness, and optimism. In the second step, three interaction terms, which were the products of gender and religiousness, gender and optimism, and religiousness and optimism were included. In step three, a three-way interaction term, the product of gender, religiousness, and optimism, was included. Consistent with procedures outlined by Cohen et al. (2003), significant interactions were probed by inserting values one standard deviation above or below the mean for each of the interacting variables. For interactions involving dichotomous variables, such as gender, this was done examining the relationship for each value of the dichotomous variable. In other words, when an interaction term included gender, the relationships among the variables were inspected separately for males and females.

Religious commitment/motivation. As can be seen in Table 3.4, optimism did not interact with religious commitment/motivation to predict alcohol use, but there was a significant main effect for religious commitment/motivation, $\beta = -.447, p < .001$, such that those who were high in religious commitment/motivation tended to drink less heavily than those low in religious commitment/motivation. There was also a significant gender-by-religious commitment/motivation interaction, $\beta = .243, p = .042$, indicating the relationship between religious commitment/motivation and alcohol use varied by gender. Figure 3.5 depicts this relationship in graphical form. Although males and females who were high in religious commitment/motivation reported comparably low levels of alcohol use, $t(257) = 1.25, p > .05$ (two-tailed), males who were low in religious commitment/motivation reported significantly more alcohol use than females who were low in religious commitment/motivation, $t(257) = 2.12, p < .05$ (two-tailed).

Religious consequences. As can be seen in Table 3.5, the three-way interaction between gender, religious consequences, and optimism was statistically significant. Figure 3.6 depicts these relationships in graphical form. Religious consequences was negatively related to alcohol use for females regardless of level of optimism (for females high in optimism, $t(200) = 15.56, p$

< .01 (two-tailed); for females low in optimism, $t(20) = 5.62, p < .01$ (two-tailed)) and for males low in optimism, $t(57) = 2.33, p < .05$ (two-tailed). However, for males high in optimism, religious consequences did not affect alcohol use, $t(57) = 1.18, p > .05$ (two-tailed).

For individuals low in religious consequences, females high in optimism reported the most alcohol use but this level was statistically comparable to alcohol use for males low in optimism, $t(257) = 1.92, p < .05$ (two-tailed). However, females high in optimism reported significantly more alcohol use than females low in optimism, $t(200) = 5.90, p < .01$ (two-tailed) and males high in optimism $t(257) = 1.31, p > .05$ (two-tailed). That is, at low levels of religious consequences, females high in optimism tended to drink in a similar manner to males and endorse even more alcohol use than some groups of males.

For individuals high in religious consequences, females high in optimism drank less heavily than any other group (lower than females low in optimism, $t(200) = 4.038, p < .01$ (two-tailed); males high in optimism, $t(257) = 4.80, p < .01$ (two-tailed), and males low in optimism, $t(257) = 3.36, p < .01$ (two-tailed). Therefore, high optimism, which is associated with higher levels of alcohol use for females low in religious consequences, acts as a buffer for females at high levels of religious consequences. Males high in optimism drank comparably to females low in optimism, $t(57) = 1.10, p > .05$ (two-tailed). Males low in optimism drank comparably to females low in optimism $t(257) = 1.20, p > .05$ (two-tailed).

Table 3.1

Summary of Factor Loadings for the Short Form of the FMS

FMS Item	Factor	
	1 (Vertical)	2 (Horizontal)
1. I help others with their religious questions and struggles.	.81	
2. I seek out opportunities to help me grow spiritually.	.78	
3. I feel a deep sense of responsibility for reducing pain and suffering in the world.		.75
4. I give a significant portion of time and money to help other people.		.50
5. I feel God's presence in my relationship with other people.	.85	
6. My life is filled with meaning and purpose.	.44	
7. I care a great deal about reducing poverty in the United States and throughout the world.		.81
8. I try to apply my faith to political and social issues.	.58	
9. My life is committed to the God of my understanding.	.87	
10. I talk with other people about my faith.	.92	
11. I have a real sense that God is guiding me.	.88	
12. I am spiritually moved by the beauty of God's creation.	.40	.54

Table 3.2

Descriptive Statistics for Study Measures

Measures	Male		Female		Total	
	M	SD	M	SD	M	SD
Religious Commitment/Motivation						
Intrinsic Religiousness Scale	3.29	.82	3.52	.79	3.66	.74
Vertical Scale	4.15	1.37	4.54	1.37	4.44	1.38
Religious Consequences*	3.51	1.13	3.87	1.14	3.80	1.14
Optimism	3.68	.82	3.65	.73	3.47	.83
Alcohol Use						
Frequency	6.34	4.15	5.72	3.31	5.89	3.51
Quantity*	5.48	3.27	3.72	2.41	4.13	2.71
Problems	1.34	.97	1.46	.82	1.44	.85

* indicates a statistically significant, $p < .05$, difference between genders on this measure.

Table 3.3

Pearson Correlations among Study Variables

	1	2	3	4	5	6	7
1. Gender ^a	1						
2. Age	-.01	1					
3. Religious Affiliation ^b	.01	.13*	1				
4. Religious Commitment/Motivation	.13*	.07	.36**	1			
5. Religious Consequences	.13*	.00	.05	.49**	1		
6. Optimism	-.02	.06	-.02	.30**	.23**	1	
7. Alcohol Use	-.11	-.08	-.30**	-.41**	-.24**	.02	1

a. Positive correlations indicate associations with females. Negative correlations indicate associations with males.

b. Positive correlations indicate associations with Protestant participants. Negative correlations indicate associations with Catholic participants.

* $p < .05$, ** $p < .01$

Table 3.4

Moderation Analyses for Religious Commitment/motivation predicting Alcohol use

Step	Variable	R ²	ΔR ²	Beta	Significance
Step 1		.192			.000
	Gender			-.053	.355
	Religious Commitment			-.447	.000
	Optimism			.147	.013
Step 2		.206	.014		.210
	Gender			-.031	.589
	Religious Commitment			-.662	.000
	Optimism			.243	.043
	Gender X Religious Commitment			.244	.039
	Gender X Optimism			-.103	.386
	Religious Commitment X Optimism			.041	.481
Step 3		.206	.000		.938
	Gender			-.033	.592
	Religious Commitment			-.661	.000
	Optimism			.240	.060
	Gender X Religious Commitment			.243	.042
	Gender X Optimism			-.100	.422
	Religious Commitment X Optimism			.033	.762
	Gender X Religious Commitment X Optimism			.008	.938

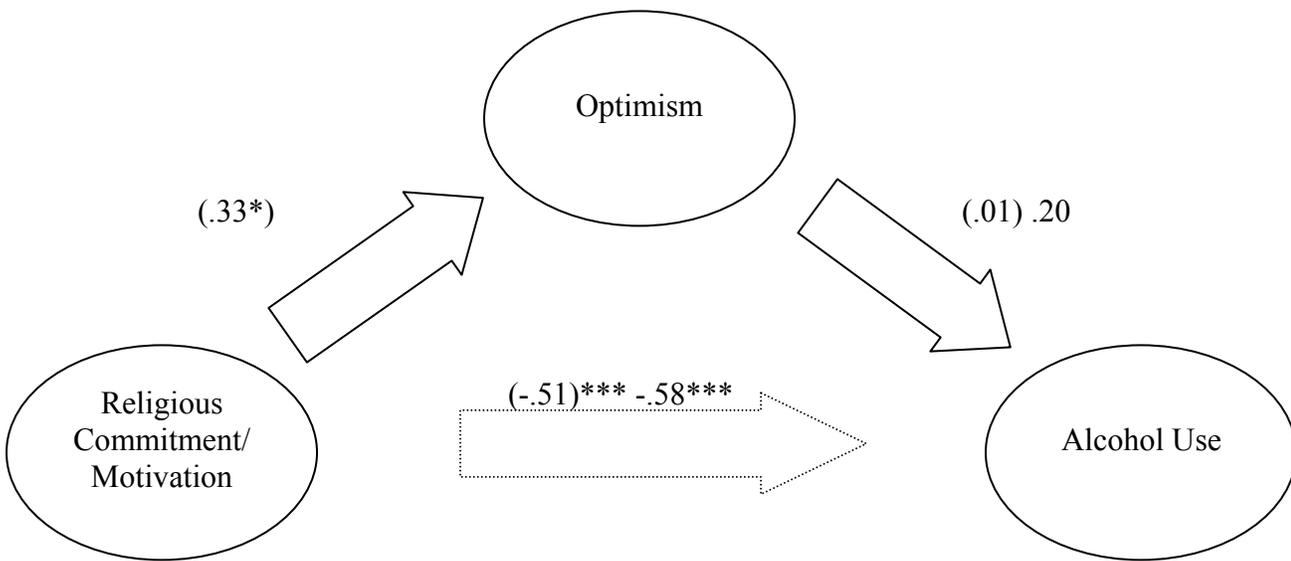
Note: Items in bold are statistically significant at the p<.05 level.

Table 3.5

Moderation Analyses for Religious Consequences predicting Alcohol use

Step	Variable	R ²	ΔR ²	Beta	Significance
Step 1		.071			.000
	Gender			-.077	.208
	Religious Consequences			-.251	.000
	Optimism			.073	.240
Step 2		.081	.010		.438
	Gender			-.057	.361
	Religious Consequences			-.201	.005
	Optimism			.055	.449
	Gender X Religious Consequences			-.121	.105
	Gender X Optimism			.049	.516
	Religious Consequences X Optimism			-.015	.810
Step 3		.100	.019		.023
	Gender			-.094	.142
	Religious Consequences			-.197	.005
	Optimism			.059	.406
	Gender X Religious Consequences			-.138	.064
	Gender X Optimism			-.008	.915
	Religious Consequences X Optimism			.070	.334
	Gender X Religious Consequences X Optimism			-.185	.023

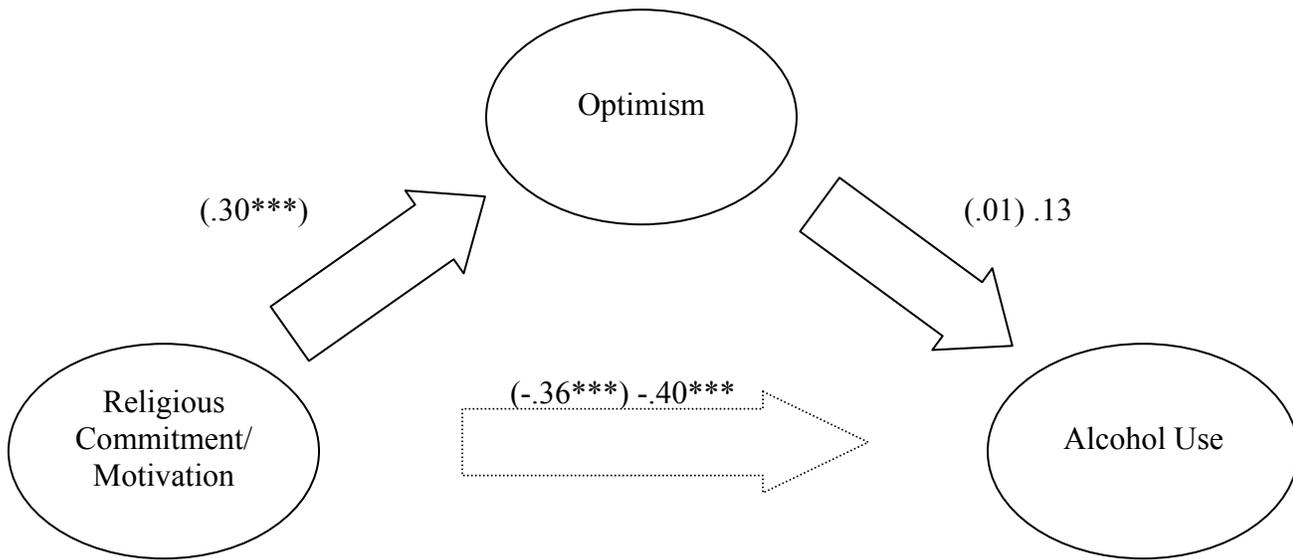
Note: Items in bold are statistically significant at the p<.05 level.



Note: The numbers in parentheses are Beta coefficients for regressions considering only the relationship between the two variables connected. Numbers not in parentheses are Beta coefficients for a regression including all three variables in the same model so that alcohol use was regressed on religious commitment/motivation and optimism.

*p<.05 **p<.01 ***p<.001

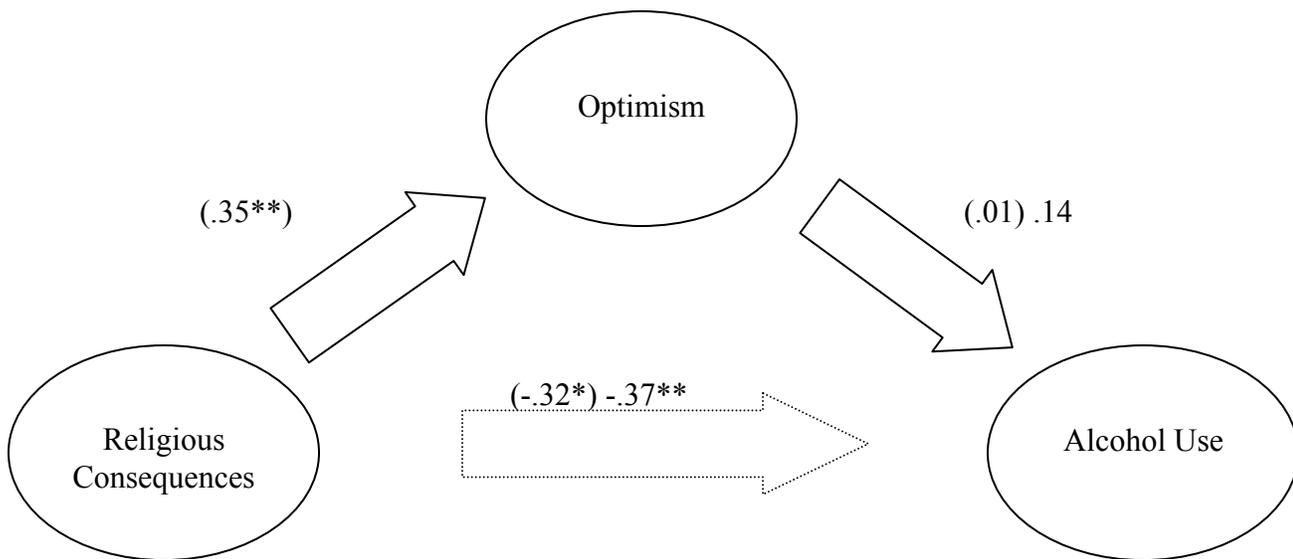
Figure 3.1. Relationships among religious commitment/motivation, optimism, and alcohol use for males.



Note: The numbers in parentheses are Beta coefficients for regressions considering only the relationship between the two variables connected. Numbers not in parentheses are Beta coefficients for a regression including all three variables in the same model so that alcohol use was regressed on religious commitment/motivation and optimism.

* $p < .05$ ** $p < .01$ *** $p < .001$

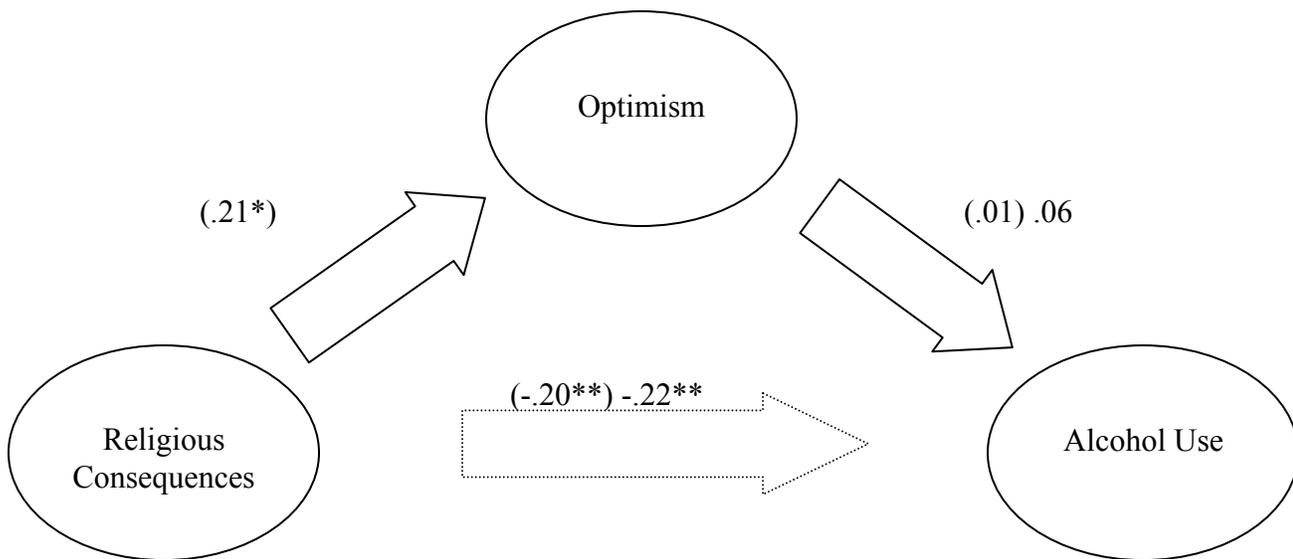
Figure 3.2. Relationships among religious commitment/motivation, optimism, and alcohol use for females.



Note: The numbers in parentheses are Beta coefficients for regressions considering only the relationship between the two variables connected. Numbers not in parentheses are Beta coefficients for a regression including all three variables in the same model so that alcohol use was regressed on religious consequences and optimism.

*p<.05 **p<.01 ***p<.001

Figure 3.3. Relationships among religious consequences, optimism, and alcohol use for males.



Note: The numbers in parentheses are Beta coefficients for regressions considering only the relationship between the two variables connected. Numbers not in parentheses are Beta coefficients for a regression including all three variables in the same model so that alcohol use was regressed on religious consequences and optimism.

*p<.05 **p<.01 ***p<.001

Figure 3.4. Relationships among religious consequences, optimism, and alcohol use for females.

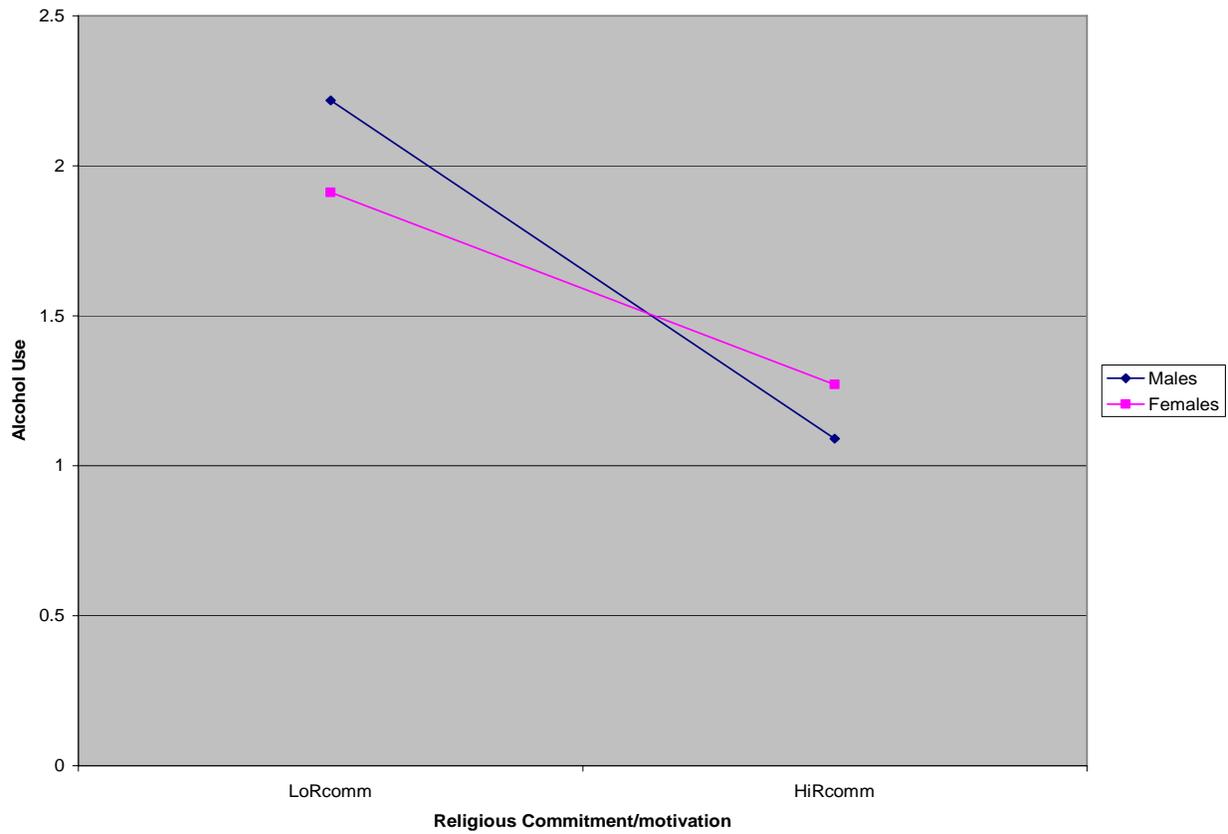


Figure 3.5. Interaction of religious commitment/motivation and gender in predicting alcohol use.

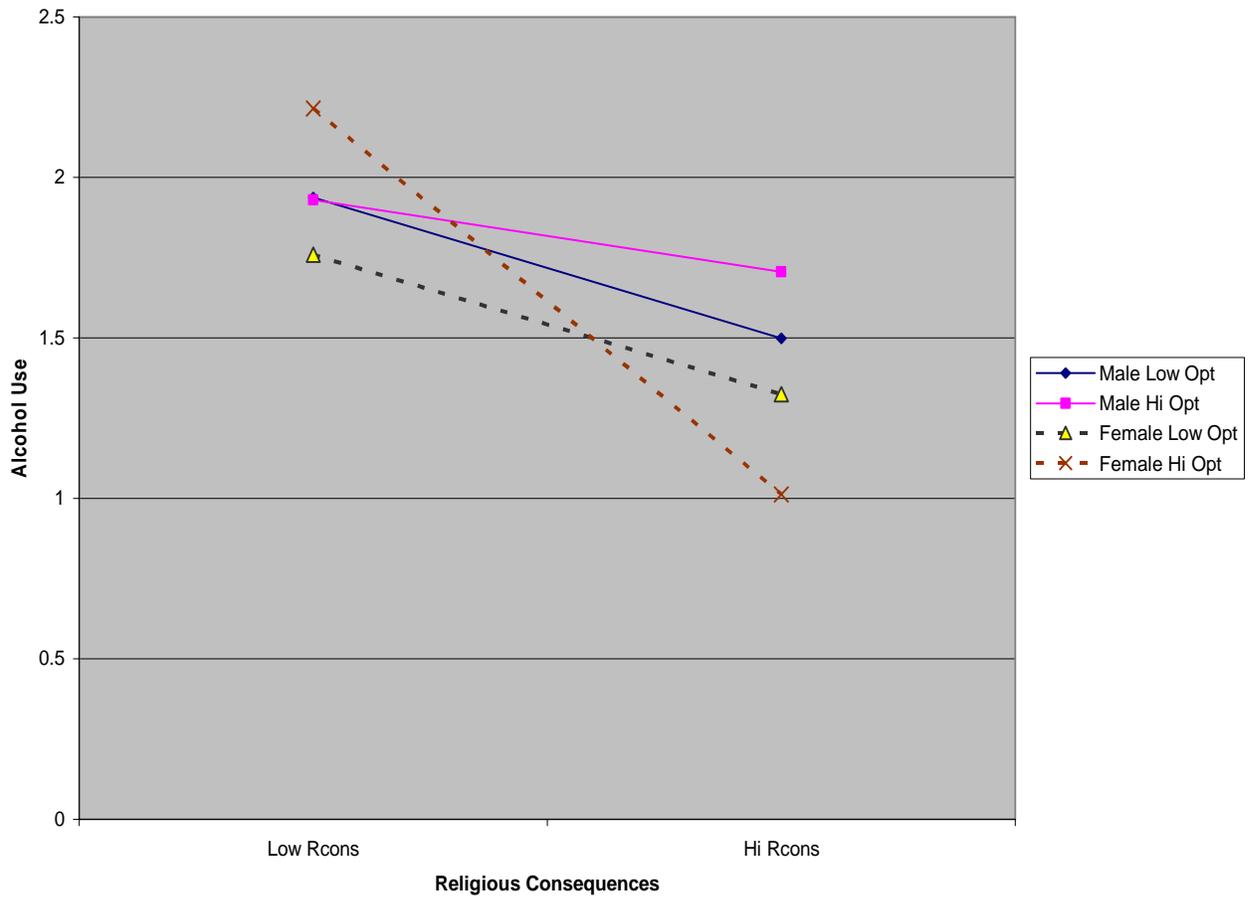


Figure 3.6. Interaction of religious consequences and optimism by gender in predicting alcohol use.

Chapter Four

Discussion

Heavy alcohol use remains the number one health problem facing college students (Brower, 2002; Vicary & Karshin, 2002; Wechsler et al., 2002a, 2002b), and while religiousness has regularly been shown to reduce drinking (Booth & Martin, 1998; Brown, Parks, Zimmerman, & Phillips, 2001; Cochran, Wood, & Arneklev, 1994; Forthun, Bell, Peek, & Sun, 1999; Mason & Windle, 2002; Perkins, 1985; Wills, Yaeger, & Sandy, 2003), little is known about the nature of this relationship regarding how and under what circumstances religiousness affects alcohol use. This has been exacerbated by confusing study findings, perhaps due to researchers' tendency to conduct atheoretical research that fails to account for gender and religious affiliation and imprecisely measures religiousness using single items and scales that assess a single dimension of this complex construct. The aim of this study was to clarify how religiousness is related to alcohol use by measuring two dimensions of religiousness and by using Koenig et al.'s (2001) hypothetical model. Specifically, I investigated whether optimism mediates this relationship. Results of this study seem to suggest the answer is no.

Does Optimism Mediate the Relationship between Religiousness and Alcohol Use?

In this study, there was no relationship between optimism and alcohol use. It is unclear why these variables were unrelated for these participants since other researchers have found a relationship between optimism and alcohol use among college students (Carvajal et al., 2002; Harju & Bolen, 1998). One possible explanation is that this study was under-powered. Carvajal et al. (2002) found a correlation of $r = -.25$ between optimism and alcohol use. While there was sufficient power among females to detect an effect this size, power was substantially reduced to .64 for males due to small sample size ($n = 58$). While this does not explain why optimism was not related to alcohol use for females in this study, it might explain why a significant relationship did not emerge for males.

Another possibility is that dispositional optimism is the wrong mental health variable to assess because it is too distal to predict drinking among college students. Perhaps situational optimism would be more strongly related to college student drinking. Segerstrom, Taylor, Kemeny, and Fahey (1998) found that situational optimism was a better predictor of immune functioning and mood than dispositional optimism and noted that optimism about a specific situation is a stronger predictor for that situation than trait-like dispositional optimism. Perhaps the same is true for college student drinking. If so, assessing optimism in a way that is specifically related to the college context — e.g., student's beliefs regarding their ability to succeed in college, to make friends at college, or to live independently — might be a better predictor of drinking on college campuses than attempting to predict drinking using more general beliefs about one's future. Future research should assess situational optimism as a more proximal correlate of alcohol use among college students. Researchers might consider conducting a pilot study in which they determine the most stressful and worrisome areas of responsibility for college students, which probably changes as students progress through college, and creating assessments for optimism regarding these areas. For instance, first-year students' situational optimism might be assessed on successfully choosing a major or joining a fraternity or sorority, and fourth-year students' situational optimism might be assessed on finding a job or being accepted into graduate school. From this, researchers could compare situational optimism regarding these particular areas to measures of dispositional optimism in regards to predicting

alcohol use.

Even if situational optimism were found to mediate the relationship between religiousness and alcohol use for college students, it is likely that it would only partially mediate the relationship. Thus, in addition to replicating and extending this study's findings regarding optimism, future researchers might also consider other mental health variables, such as social anxiety, which might better account for the relationship between religiousness and alcohol use than dispositional optimism among college students. For most college students, competent social interaction and gaining peer approval are important components of college life (Capraro, 2000), and such a social demand may lead to increased anxiety for some students. A common positive expectancy of alcohol use is that it increases one's socialization abilities (Ichiyama & Kruse, 1998); therefore, students with increased social anxiety may tend to drink more heavily in order to reduce their fears of being in groups and meeting new people. While this variable could include clinical levels of this anxiety, it might work on a continuum such that a steady positive correlation with alcohol use is found such that individuals low in social anxiety might drink less heavily, students with moderate social anxiety might drink moderately, and students with high levels of social anxiety might drink most heavily. Indeed, social anxiety and alcohol use have a complex but generally positive relationship among college students (Gilles, Turk, & Fresco, 2006; Ham & Hope, 2006; Morris, Stewart, & Ham, 2005). Social anxiety might also be reduced by religiousness as individuals may find acceptance and belonging in their religious institution or their religion might provide individuals ways of reducing their anxiety such as through prayer or trusting that God will provide them with friends. Though research connecting religiousness to social anxiety is limited, researchers have found religious/spiritual components, such as singing religious hymns and focusing on the sacred in a distressing situation, effective in reducing social anxiety among therapy clients, implying that religiousness and social anxiety may be associated in broader ways (Corckle, Bohn, Hughes, & Kim, 2005; Khouzam, Ghafoori, & Nichols, 2005). If social anxiety were found to mediate between religiousness and alcohol use, where dispositional optimism did not, it would add further precision to Koenig et al. (2001)'s model, showing that some mental health variables are more important than others in accounting for the positive and negative effects of religiousness on alcohol use among college students.

That optimism did not emerge as a mediator suggests that Koenig et al.'s (2001) model may need to be refined in at least three ways. First, greater specificity is needed regarding which mental health variables might be mediators. What seems clear from the results of this study is that if mental health does mediate the connection between religiousness and alcohol use as Koenig et al. (2001) suggest, it likely does so for some mental health variables but not for others. In addition to mentioning optimism, Koenig et al. (2001) also mentioned depression, psychological stress, life satisfaction, and hope as other important mental health variables, and above I discussed social anxiety as yet another possibility. Thus, in addition to replicating the findings of this study, future research should investigate these other mental health variables.

Second, greater specificity is needed regarding to whom this model applies. Although Koenig et al. (2001) mention optimism as a possible mediator, and while dispositional optimism has repeatedly been shown to have a negative relationship to alcohol use in the adult alcohol treatment literature (e.g., Majer, Jason, Ferrari, Olson, & North, 2003; Strack, Carver, & Blaney, 1987; White, Wampler, & Fischer, 2001), studies using college and adolescent populations have been less consistent. Most studies with college students generally show dispositional optimism to be negatively correlated with alcohol use (e.g., Carvajal et al., 2002), but some have shown a positive correlation (e.g., Ciernava, 1999) and still others have shown no correlation at all (e.g.,

Grunbaum, Tortolero, Weller, & Gingis, 2000). Thus, it is possible that Koenig et al.'s (2001) model may work well for adults but may need to be modified to fit college-age youth. Future research on Koenig et al.'s (2001) model should test for differences in third variables accounting for the relationship of religiousness and alcohol use between college students and other populations. First, college students should be compared to their noncollege peers in testing the same model. For instance, optimism did not mediate the religiousness alcohol use link among college students in this study, but this link could exist for their noncollege peers. Second, college students should be compared to other age groups, such as adults who had attended college, in testing the same model. These comparisons should be made while accounting for important differences between particular groups that have already shown differences in the religiousness-alcohol use link, such as males and females (Templin & Martin, 1999), African Americans and Caucasians (Brown et al., 2001), and Protestants and Jews (Perkins, 1985). This increased specificity may reveal different mediators of the religiousness-alcohol use link among these different populations.

Third, greater specificity is needed regarding the dependent variable. I focused on frequency, quantity, and problematic type of alcohol use because these are the aspects of use and abuse mentioned in Koenig et al.'s (2001) model. However, it is possible that among Caucasian, Christian, primarily female college students these are not the most salient aspects of alcohol use. Perhaps among Caucasian, Christian, primarily female college students the manner in which alcohol is used, such as using alcohol to cope, is more pertinent than how much or how often it is consumed. In fact, the main way in which optimism has been linked to alcohol use has been through coping such that individuals low in optimism tend to use alcohol to cope more frequently than highly optimistic individuals, who tend to use more active forms of coping (Carver et al., 1989; Harju & Bolen, 1998). Also, while college students are motivated to drink for a variety of reasons (e.g., peer approval and positive expectancies about alcohol; Capraro, 2000; Ichiyama & Kruse, 1998), drinking to cope has been associated with many negative consequences and seems to be the most problematic motivator for drinking (Simons, Gaher, Correia, Hansen, & Christopher, 2005). Thus, it is possible that optimism would mediate the link between religiousness and alcohol use if alcohol use was operationalized as using alcohol to cope rather than as, for example, frequency of alcohol use. Future research should explore using alcohol to cope as a dependent variable for Caucasian, Christian, primarily female college students in Koenig et al.'s (2001) model and should compare this measure of alcohol use to the measures used in this study.

Does Optimism Interact with Religiousness to Predict Alcohol Use?

A second question investigated in this study was whether optimism might interact with religiousness in predicting alcohol use, and whether that interaction might vary depending on the dimension of religiousness being examined. I hypothesized that optimism would interact with religious commitment/motivation to predict alcohol use, but not with religious consequences because as a result of being closely committed to God (being high in religious commitment/motivation), individuals would likely experience a greater sense of hope for their futures but engaging in prosocial behaviors because of one's religious beliefs (religious consequences) would not necessarily be related to one's hope regarding the future. The results of this study were the exact opposite of what I predicted; there was no interaction for religious commitment/motivation and optimism, but there was one for religious consequences such that females high in optimism were much more strongly affected by engaging in helping behaviors

towards others because of their religion.

Religious commitment/motivation. One possible explanation that may account for this surprising finding that religious commitment/motivation did not interact with optimism in predicting alcohol use is that being high in religious commitment/motivation and low in optimism are not necessarily dissonant beliefs. My predictions were based upon the idea that individuals who were high in religious commitment/motivation but low in optimism might drink more heavily as a means of coping with dissonant beliefs. While the Christian Bible seems to indicate those who are strongly committed to Christianity will benefit both now and in heaven, it also teaches and provides examples that those who adopt the Christian faith will likely suffer for their beliefs. Because of this, individuals who report strong commitment to a loving God yet do not expect good for their futures may not experience dissonance between beliefs. While research has tended to show a positive association between religiousness and optimism (Koenig et al., 2001), future studies should further assess this relationship. Perhaps certain religious or denominational differences strengthen or reduce the religiousness-optimism link; therefore, assessing this relationship among different religious groups (e.g., Mormons, Baptists, Orthodox Jews, Zen Buddhists) in future research may highlight important aspects of religiousness that account for this link.

Unlike with optimism, religious commitment/motivation did interact with gender. While religious commitment/motivation was negatively related to alcohol use for both genders, males' alcohol use was more strongly affected by religious commitment/motivation than females'. At low levels of religious commitment/motivation, males reported significantly more alcohol use than females; however, at high levels of religious commitment/motivation, males and females reported comparable amounts of alcohol use. As stated above, gender has been found to be an important third variable in assessing religiousness and alcohol use (Bliss and Crown, 1994; Dawson et al., 2004; Strawbridge et al., 2001; Templin & Martin, 1999), which is true for this study as well. While research has consistently shown that males drink more alcohol than females (e.g., Brower, 2002; Capraro, 2000; Gleason, 1994), it seems that an increased commitment to one's religion can be an important protector for males against drinking heavily, even reducing it to the same level as females who are strongly committed to their religion.

Religious consequences. Surprisingly, religious consequences, gender, and optimism all interacted in predicting alcohol use. The group carrying the action of this significant interaction was females high in optimism and low in religious consequences. For all other groups, alcohol use was low. But females low in religious consequences and high in optimism consumed alcohol at the highest level. Far from being protective, it seems that females that are high in optimism but do not engage in prosocial behaviors that stem from their religious beliefs actually drink more heavily. This surprising finding, that optimism is associated with increased alcohol use for females low in religious consequences, might possibly be explained by what some researchers call "optimistic bias," a trend describing individuals high in optimism who believe that bad things happen to others but will not happen to them (Chapin, 2001; Schmid, 1998). Individuals with an optimistic bias are more likely to engage in risky behaviors including heavy alcohol use (Chapin, 2001) because they believe there is something unique about them that entitles them to success. This optimistic bias may account for the finding that females low in religious consequences but high in optimism drank more heavily than any other combination of religious consequences and optimism for both males and females in this analysis.

Conversely, there may be something about being high in religious consequences that protects some females high in optimism from the risky behaviors associated with optimistic bias.

Those females high in religious consequences may gain a sense of meaning, purpose, and hope from their religious beliefs and behaviors (Koenig et al., 2001) instead of from some sense of entitlement or invincibility like other females high in optimism but who are low in religious consequences. However, religions also provide worldviews that postulate certain behaviors will hold natural consequences (e.g., religious teachings that heavy drinking will lead to negative consequences), and therefore, while religion gives the person hope for her future, this hope is tied to a particular belief set. Thus, this individual's hope is tied to living out her religious worldview, specifically in the extent to which she is acting out her religion by helping others. Because of this, these individuals may have great hope for their futures but not believe they are any safer to negative outcomes than anyone else if they choose to take part in behaviors that transgress their religious beliefs.

Understanding religious consequences. Since religious consequences and not religious commitment/motivation interacted with optimism, a revision is needed in conceptualizing religious consequences and why it might be important in health outcome research in different ways than other dimensions of religiousness, such as religious commitment/motivation. Both Koenig et al. (2001) and Benson et al. (1993) described religious consequences as helping others because of one's religious beliefs in a generic way that included both helping friends and family members with problems, especially related to matters of faith, and a broader helping individuals outside of one's direct sphere of influence, such as helping the homeless, the poor in other countries, or victims of natural disasters. However, my understanding of religious consequences was evolved by the factor analysis done in this study. The results of this analysis indicated that religious consequences only tends to describe how individuals relate to a broader desire of helping those in need, most regularly, outside of their immediate relationships, while helping friends and family members is associated with religious commitment/motivation, the extent to which individuals' religious beliefs permeate their lives. Therefore, I now understand religious consequences as individuals attempting to better the world in a broad sense, especially through helping people, because of their religious convictions.

Perhaps religious consequences is an especially important dimension of religiousness in researching health outcomes because it measures specific behavioral changes individuals make because of their religious beliefs, but the benefits regarding health outcomes of these behavioral changes may also be affected by the extent to which individuals are committed to these religious beliefs. For example, if individuals are highly committed to their religion and they engage in prosocial behaviors because of this, they would likely report reduced alcohol use perhaps even over groups that report high commitment to their religion but are not engaging in helping behaviors because of it. In other words, being high in religious commitment/motivation could be innocuous, in regards to alcohol use, unless it is paired with changes in behaviors because of that religion, such as engaging in prosocial behaviors. In fact, Brechting, Salsman, Collier, and Carlson (2006) found accounting for behavioral indicators in conjunction with attitudinal indicators of religiousness provided better prediction of alcohol use among college students.

These predictions are based on the idea that individuals may not be inspired to help other people because of their religion until they are strongly committed to that relationship so that individuals at high levels of religious commitment/motivation would be the ones most likely to engage in prosocial behaviors because of their religious beliefs; however, there may be some groups who are helping others because of their religion but who are not strongly committed to that religion. This may occur for a variety of reasons including growing up in a religion individuals are beginning to doubt but in which they still are actively involved or being active in

a church or campus ministry for social benefits and a sense of belonging. Whatever the reason, it is unclear that engaging in these prosocial behaviors because of a religion will help individuals if they are not also committed to that religion. In fact, performing religious behaviors for reasons other than a commitment to that religion has been repeatedly associated with negative health outcomes (Donahue, 1985; Smith, McCullough, & Poll, 2003; Ventis, 1995).

Interaction of religious commitment/motivation and religious consequences. Because of this, it seemed necessary to examine how these two dimensions of religiousness might interact in predicting alcohol use. In a post hoc hierarchical multiple regression, alcohol use was regressed on religious commitment/motivation, religious consequences, gender, and appropriate interaction terms for all variables. In step one, alcohol use was regressed on gender, religious commitment/motivation, and religious consequences. In step two, two-way interaction terms, gender by religious commitment/motivation, gender by religious consequences, and religious commitment/motivation by religious consequences, were included. In step three, a three-way interaction term, gender by religious commitment/motivation by religious consequences, was included. As can be seen in Table 4.1, gender, religious commitment/motivation, and religious consequences interacted. This is graphically depicted in Figure 4.1.

Religious consequences was negatively related to alcohol use, $t(200) = 3.61, p < .01$ (two-tailed), for females that were low in religious commitment/motivation. That is females who are not strongly committed to their religion *still benefit* from performing prosocial acts because of this religion as they are likely to drink less heavily. Females who were low in both religious commitment/motivation and religious consequences were the worst off, reporting drinking more heavily than any other group in this analysis (including males who were low in religious commitment/motivation and religious consequences, $t(257) = .386, p < .01$ (two-tailed)). For females who were high in religious commitment/motivation, religious consequences was not related to alcohol use, $t(200) = 1.91, p > .05$ (two-tailed). That is, when it comes to alcohol use, females who are strongly committed to their religion *do not seem to benefit* from increased engagement in prosocial behavior because of their religions.

In contrast, males that were low in religious consequences reported comparable alcohol use regardless of level of religious commitment/motivation, $t(57) = .0671, p > .05$ (two-tailed). In other words, if males were not engaging in prosocial acts because of their religious beliefs, their level of commitment to their religion did not change their alcohol use. For males who are high in religious commitment/motivation, religious consequences has a negative relationship with alcohol use, $t(57) = 4.15, p < .01$ (two-tailed). In fact, the combination of high religious commitment/motivation and high religious consequences reduces males' alcohol use so that it is comparable with females high in religious commitment/motivation, the group that drinks the least, $t(257) = 1.19, p > .05$ (two-tailed). For males low in religious commitment/motivation, religious consequences has a positive relationship with alcohol use, $t(57) = 2.86, p < .01$ (two-tailed). Therefore, if males are strongly committed to their religion, engaging in prosocial acts because of their religion is associated with drinking less; however, if males are engaging in prosocial acts because of a religion to which they are not strongly committed, they tend to drink more heavily.

Implications from moderation analyses. The findings of these moderation analyses highlight the importance of considering specific dimensions of religiousness, how these dimensions interact with important moderators, and even how they interact with each other in predicting health outcomes like alcohol use. Previous studies in religiousness literature have shown that attitudinal indicators of religiousness are more important than behavioral indicators

of religiousness in predicting health and mental health outcomes (Hackney & Sanders, 2003); however, my study seems to indicate that choosing between attitudinal and behavioral components of religiousness should not be an “either/or” but should be a “both/and” decision. In this study, including *both* attitudinal *and* behavioral indicators of religiousness in the same analyses accounted for more variance in predicting alcohol use because of their interaction, and their combination highlighted important distinctions such that some combinations of these attitudinal and behavioral indicators of religiousness seem to help reduce alcohol use and others tend to increase it. Therefore, future studies should include multidimensional assessments of religiousness and should examine the interaction of these religiousness dimensions.

These findings also support further revisions to Koenig et al.’s (2001) model in that third variables such as optimism can profoundly affect health outcomes even when they are not playing a mediating role for all participants. Thus, this model should be revised to include both mediation and moderation.

Future studies might also include increased use of religious consequences as an important dimension of religiousness for studying outcome variables. This study provided new clarity about what religious consequences entails, individuals influencing the world as a result of their religious beliefs, which should be tested in others samples. Also, while researchers have used other behavioral indicators to assess religiousness such as church attendance (Cochran et al., 1994; Galen & Rogers, 2004; Mason & Windle, 2002; Park et al., 2001), religious salience (Brown et al., 2001; Mason & Windle, 2002; Perkins, 1985), and frequency of prayer (Brown et al., 2001; Galen & Rogers, 2004), religious consequences, which is a broader assessment of behavior, may not be prone to some of the inaccuracies and misrepresentations some researchers have found with more specific measures of religious behaviors (Hill, 2005). This study found religious consequences plays an important role in clarifying the relationships between religiousness and alcohol use; therefore, assessing the role of religious consequences with other third variables presented in Koenig et al.’s (2001) model, such as social support and other aspects of mental health (e.g., social anxiety), would further contribute to religiousness research by testing a theoretical framework for the relationships of religiousness and health outcomes.

Finally, this study highlights the importance of a multidimensional assessment of religiousness. Religious commitment/motivation and religious consequences were both shown to be important predictors of alcohol use. Also, religious consequences interacted with optimism while religious commitment/motivation did not in predicting alcohol use. Finally, religious commitment/motivation and religious consequences accounted for a larger proportion of the variance in predicting alcohol use when used in the same model than each did independently and these variables interacted with each other in predicting alcohol use. Thus, these findings suggest different dimensions of religiousness predict alcohol use in different ways including working through different third variables. Future research should explore differences between other dimensions of religiousness in predicting alcohol use and might even test optimism as a third variable of this relationship. For instance, religious quest, which is viewing religion as an unending journey of questioning and growing, may be negatively related to optimism and positively related to alcohol use while religious well-being, the satisfaction one receives from his or her relationship with God, may be positively related to optimism and negatively related to alcohol use. These studies would add clarity to the religiousness research literature regarding which dimensions of religiousness work through which third variables in predicting particular health outcomes.

Limitations

The findings of this study must be considered in light of its limitations. One limitation is that analyses run separately for males were underpowered. Power analyses indicated that with my sample of 58 males, I had .64 power to detect an effect of $r = .30$ magnitude but only .33 power to detect an effect of $r = .20$ magnitude. My review of the literature suggests that the magnitude of the effects of interest in this study were in the range $r = .20 - .30$ (e.g., Carvajal et al. 2002; Chapin, 2001). Thus, if the effects in this study were moderate to large, I had sufficient power to detect them, but if they were small, I may have missed them. Yet despite this power problem, gender was repeatedly shown to be an important variable in this study as the study variables interacted differently for each gender. That gender differences emerged despite the low power for males suggests that gender effects in this study were likely large enough to be detected. However, to have greater confidence in the findings, especially for males, this study should be replicated with a larger, more gender-balanced sample.

Another limitation of this study is the lack of ethnic and religious diversity. As only Caucasian, Christian (i.e., Catholics and Protestants) participants were included, this study could not assess the possibility of important ethnic and religious differences. In fact, ethnic minorities tend to be more religious and drink less heavily than Caucasians (Brown et al., 2001), and religious affiliation has been shown to affect students' alcohol use (Galen & Rogers, 2004). Because of the sample size, this study was unable to analyze Catholic and Protestant participants separately and non-Caucasian ethnic groups were not included in analyses. While this study does contribute to our understanding of the relationship between religiousness and alcohol use, part of understanding how religiousness works includes considering that religiousness works through different means in different settings for different people (Schutte & Hosch, 1996). Therefore, replicating this study in samples with greater ethnic and religious diversity would provide more clarity regarding for whom and under what circumstances religiousness affects alcohol use.

Another limitation is this study's use of cross-sectional data. That this study tested mediation with cross-sectional data is consistent with the majority of social and behavioral research (Hill, 2005; Hood & Belzen, 2005; Koenig et al., 2001), but it is, nonetheless, not ideal. Ideally, mediation analyses should be tested using longitudinal data (Cohen et al., 2003). These mediation analyses were based on Koenig et al.'s (2001) model, which postulates that religiousness affects optimism; however, optimism could potentially lead people to be more religious instead. For instance, optimistic individuals may be more likely to engage in the types of prosocial behaviors that increase religious consequences. Cross-sectional data cannot show directionality (Cohen et al., 2003); therefore, we must rely on theory to speculate the correct directionality while using this type of data. Particularly in studies conducting model testing, longitudinal data provides an invaluable directionality component and is recommended in future studies. Not only would longitudinal studies clarify the direction of the relationship, but they would also provide opportunities to investigate developmental changes in different dimensions of religiousness and whether such changes alter the nature of the relationship among religiousness, optimism, and alcohol use over time.

Another limitation concerns differences in the timeframe of the measures. I asked participants to estimate their frequency and quantity of alcohol use over the past year, and this may have spanned too broad a timeframe and resulted in inaccuracy of reporting (Aguinis, Pierce, & Quigley, 1995; Hill, 2005). As in other studies, using a current estimate such as alcohol use in the past two weeks (Wechsler et al., 2002a) or thirty days (Johnston et al., 2004) would have been more appropriate and could have even resulted in different findings.

Additionally, I assessed current religiousness and current optimism, but past year alcohol use. This is problematic because it neglects the possibility that participants might have experienced important changes in the past year, e.g., religious conversion or beginning/ending fraternity or sorority membership. If these changes in any of these variables occurred, this study would have no way of knowing it and may, thus, be missing some aspects of how participants' religiousness, optimism, and alcohol use are related.

Finally, the data used in this study did not include a measure of social desirability, which is suggested for studies using religiousness variables (Hill, 2005; Storch et al., 2003; Strawser et al., 2004). As this study asked questions of a personal nature, such as questions about alcohol use and religiousness, individuals may have responded in ways that were more socially acceptable. For instance, individuals scoring high in measures of religiousness might underrepresent their drinking as drinking heavily may not be tolerated in their religious communities. While this possibility is concerning, failing to include a measure social desirability does not necessarily negate the validity of participants' reports nor of this study. Steps were taken to ensure participant confidentiality and participants were asked to report honestly, and because of this, as is done regularly in social and behavioral research (Hill, 2005), participants' reports are accepted as accurate. However, measures of social desirability would provide further confidence and are recommended in future studies.

Conclusion and Implications

In conclusion, this study has moved beyond the bivariate relationship of religiousness and alcohol use by highlighting the importance of optimism in predicting this relationship for at least one dimension of religiousness, religious consequences. These findings indicate that optimism is not an important predictor of alcohol use unless it is considered in conjunction with religious consequences. In other words, being optimistic is not necessarily associated with reduced alcohol use. In some cases, when religious consequences is low for females, high optimism will predict more alcohol use. Also, optimism was a significant moderator for religious consequences but not for religious commitment/motivation, stressing the importance of including different dimensions of religiousness in the same study.

This study has empirically tested one aspect of the theory-driven model of Koenig et al. (2001) and shown that some refinements may be necessary. It seems that dispositional optimism may not be an appropriate mediator between religiousness and alcohol use for college students. Though not specifically tested in this study, these results also seem to suggest that different dimensions of religiousness may be mediated by different variables in predicting alcohol use.

Finally, this study underscores the importance of gender-targeted interventions (Brower, 2002; Capraro, 2000; Dawson et al., 2004) as some combinations of religiousness and optimism tend to be associated with reduced drinking for one gender and increased drinking for the other. For instance, for individuals who are not strongly committed to their religions, increased engagement in prosocial acts because of their religion acts as a buffer for females against heavy drinking but is associated with increased drinking for males. Both males and females tend to benefit, in regards to reduced drinking, from increased commitment to their religions, but males' alcohol use is more strongly affected by their level of commitment to their religion than is the effect of females' religious commitment on their alcohol use.

These findings have some practical implications. Religious organizations would seemingly benefit all their college-student members by fostering higher levels of commitment. Also, targeting males who were strongly committed to their religion for outreach and service

opportunities would likely benefit this population in regards to reducing heavy drinking. While females who are strongly committed to their religion do not seem to benefit from engaging in prosocial acts in regards to drinking, other groups of females, such as those not strongly committed to their religion and especially females high in optimism, would likely drink less heavily when regularly engaging in outreach and service opportunities. While considering the practical implications of implementing these very specific findings for certain groups of males and females at certain levels of optimism, religious consequences, and religious commitment/motivation may seem confusing and cumbersome to some, targeting interventions at this level of specificity seems to be necessary as college communities attempt to effectively fight against heavy drinking on their campuses.

Table 4.1

Moderation Analyses for Gender, Religious Commitment/motivation, and Religious

Consequences predicting Alcohol use

Step	Variable	R ²	ΔR ²	Beta	Significance
Step 1		.195			.000
	Gender			-.047	.409
	Religious Commitment			-.416	.000
	Religious Consequences			-.070	.282
Step 2		.212	.017		.510
	Gender X Religious Commitment			-.162	.061
	Gender X Religious Consequences			.012	.887
	Religious Commitment X Religious Consequences			-.057	.368
Step 3		.280	.068		.000
	Gender X Religious Commitment X R. Consequences			.436	.000

Note: Items in bold are statistically significant at the p<.05 level.

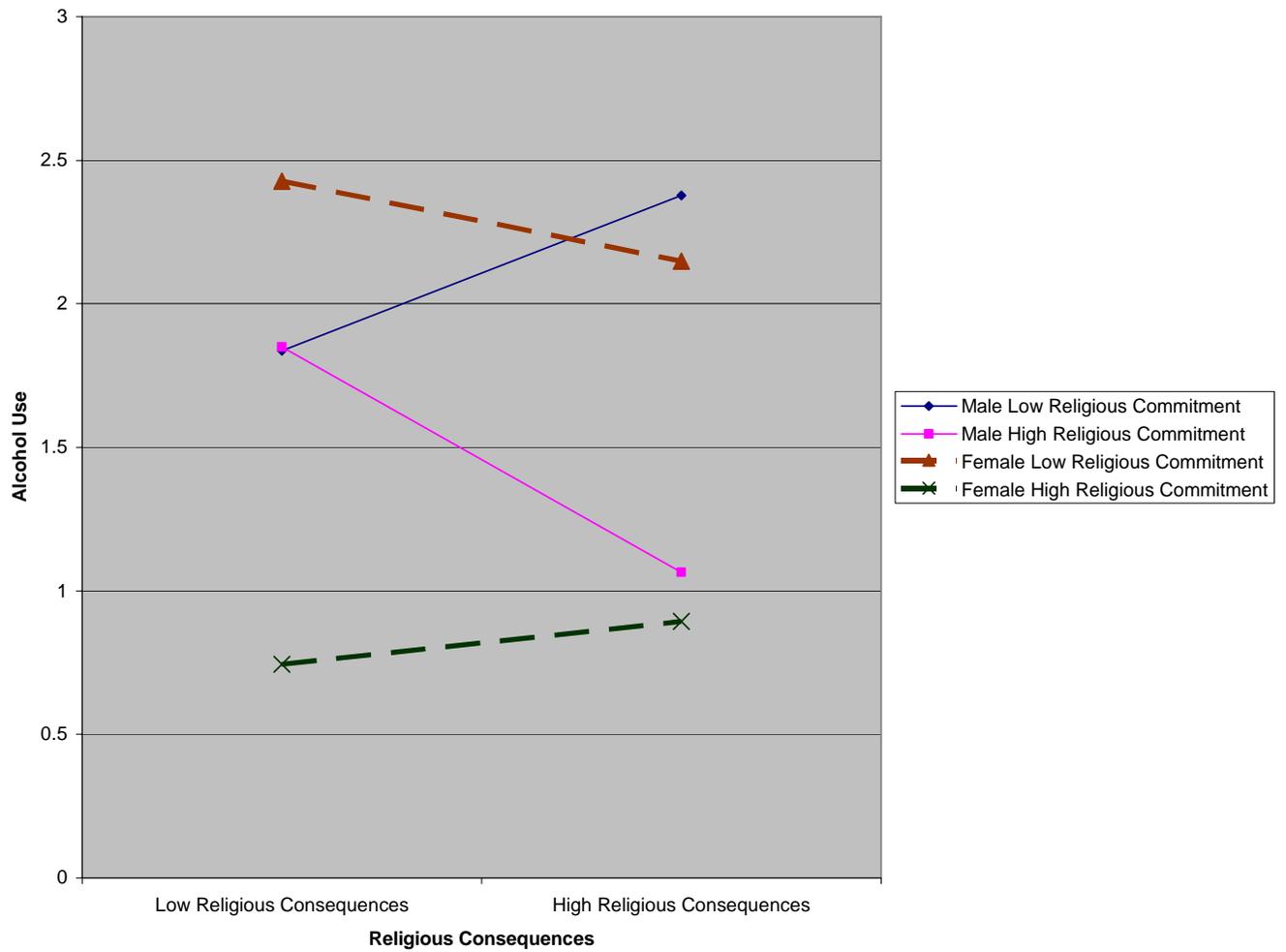


Figure 4.1. Interaction of Religious Commitment/motivation and Religious Consequences by gender in predicting alcohol use.

Appendix A

Intrinsic/Extrinsic-Revised Scale

Please indicate the extent to which you agree or disagree with each item below by using the following rating scale.

1 = I strongly disagree

2 = I tend to disagree

3 = I'm not sure

4 = I tend to agree

5 = I strongly agree

1. I enjoy reading about my religion.
2. I go to church because it helps me to make friends.
3. It doesn't much matter what I believe as long as I am good.
4. It is important to me to spend time in private thought and prayer.
5. I have often had a strong sense of God's presence.
6. I pray mainly to gain relief and protection.
7. I try hard to live all my life according to my religious beliefs.
8. What religion offers me most is comfort in times of trouble and sorrow.
9. Prayer is for peace and happiness.
10. Although I am religious, I don't let it affect my daily life.
11. I go to church mostly to spend time with my friends.
12. My whole approach to life is based on my religion.
13. I go to church mainly because I enjoy seeing people I know there.
14. Although I believe my religion, many others things are more important in life.

Appendix B

Faith Maturity Scale- Vertical Scale

Mark one answer for each. Be as honest as possible, describing how true it really is and not how true you would like it to be. Choose from these responses:

- 1 = never true
- 2 = rarely true
- 3 = true once in a while
- 4 = sometimes true
- 5 = often true
- 6 = almost always true
- 7 = always true

- 1. I help others with their religious questions and struggles.
- 2. I seek out opportunities to help me grow spiritually.
- 3. I feel God's presence in my relationship with other people.
- 4. My life is filled with meaning and purpose.
- 5. I try to apply my faith to political and social issues.
- 6. My life is committed to the God of my understanding.
- 7. I talk with other people about my faith.
- 8. I have a real sense that God is guiding me.

Appendix C

Faith Maturity Scale- Horizontal Scale

Mark one answer for each. Be as honest as possible, describing how true it really is and not how true you would like it to be. Choose from these responses:

- 1 = never true
- 2 = rarely true
- 3 = true once in a while
- 4 = sometimes true
- 5 = often true
- 6 = almost always true
- 7 = always true

1. I feel a deep sense of responsibility for reducing pain and suffering in the world.
2. I give a significant portion of time and money to help other people.
3. I care a great deal about reducing poverty in the United States and throughout the world.
4. I am spiritually moved by the beauty of God's creation.

Appendix D

Life Orientation Test – Revised

Please mark only one answer for each question. Please be as accurate and honest as you can, and try not to let your answers to one question influence your answers to the other questions. There are no right or wrong answers.

- 1 = strongly disagree
- 2 = disagree
- 3 = neutral
- 4 = agree
- 5 = strongly agree

1. In uncertain times, I usually expect the best.
2. It's easy for me to relax.
3. If something can go wrong for me, it will.
4. I'm always optimistic about my future.
5. I enjoy my friends a lot.
6. It's important for me to keep busy.
7. I hardly ever expect things to go my way.
8. I don't get upset too easily.
9. I rarely count on good things happening to me.
10. Overall, I expect more good things to happen to me than bad.

References

- Abrams, D. B. & Niaura, R. S. (1987). Social learning theory. In Blane, H. T. & Leonard, K. E. (Eds.) *Psychological Theories of Drinking and Alcoholism* (pp. 131-178). New York: Guilford Press.
- Aguinis, H., Pierce, C. A., & Quigley, B. M. (1995). Enhancing the validity of self-reported alcohol and marijuana consumption using a bogus pipeline procedure: A meta-analytic review. *Basic and Applied Social Psychology*, 19, 515-527.
- American College Health Association (2005). The American College Health Association National College Health Assessment, spring 2003 reference group report. *Journal of American College Health*, 53, 199-210.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Benson, P. L., Donahue, M. J., & Erickson, J. A. (1993). The faith maturity scale: conceptualization, measurement, and empirical validation. *Research in the Social Scientific Study of Religion*, 5, 1-26.
- Bliss, S. K. & Crown, C. L. (1994). Concern for appropriateness, religiosity, and gender as predictors of alcohol and marijuana use. *Social Behavior and Personality*, 22, 227-238.
- Booth, J. & Martin J. E. (1998). Spiritual and religious factors in substance use, dependence and recovery. In H. G. Koenig (Ed.) *Handbook of Religion and Mental Health* (pp. 175-202). New York: Academic Press.
- Brechting, E.H., Salsman, J.M., Collier, B., & Carlson, C.R. (2006). Moving forward: A better understanding of the relationship between religiousness and alcohol problems. *Alcoholism: Clinical and Experimental Research*, 30, 141.
- Brower, A. M. (2002). Are college students alcoholics? *Journal of American College Health*, 50, 253-255.
- Brown, T. L., Parks, G. S., Zimmerman, R. S., & Phillips, C. M. (2001). The role of religion in predicting adolescent alcohol use and problem drinking. *Journal of Studies on Alcohol*, 62, 696-705.
- Brown, T. L., Salsman, J. M., Brechting, E., & Carlson, C. R. (in press). Social support as a moderator of the relationship between underage college drinking and both religiousness and spirituality.
- Capraro, R. L. (2000). Why college men drink: Alcohol, adventure, and the paradox of masculinity. *Journal of American College Health*, 48, 307-315.
- Carvajal, S. C., Evans, R. I., Nash, S. G., & Getz, J. G. (2002). Global positive expectancies of the self and adolescents' substance use avoidance: Testing a social influence mediational model. *Journal of Personality*, 70, 421-442.
- Carver, C. C., Scheier, M. F., and Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267-283.
- Center for Disease Control and Prevention (2004). *Sexually transmitted disease surveillance, 2003*. Atlanta, GA: US Dept. of Health and Human Services.
- Chen, K. & Kandel, D. B. (1995). The natural history of drug use from adolescent to the mid-thirties in a general population sample. *American Journal of Public Health*, 85, 41-47.
- Cierneva, R. (1999). Optimism and the health behaviour of secondary-school and university students. *Psychologia a Patopsychologia Dietata*, 34, 134-144.
- Cochran, J. K., Wood, P. B., & Arneklev, B. J. (1994). Is the religiosity-delinquency relationship

- spurious? A test of arousal and social control theories. *Journal of research on delinquency*, 31, 92-123.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Core Institute, Southern Illinois University, Carbondale. (2005). *Measuring change, delivering results*. Retrieved May 30, 2005, from http://www.siu.edu/departments/coreinst/public_html
- Corwyn, R. F. & Benda, B. B. (2000). Religiosity and church attendance: The effects on use of "hard drugs" controlling for sociodemographic and theoretical factors. *The International Journal for the Psychology of Religion*, 10, 241-258.
- Dawson, D. A., Grant, B. F., Stinson, F. S., & Chou, P. S. (2005). Another look at heavy episodic drinking and alcohol use disorders among college and noncollege youth. *Journal of Studies on Alcohol*, 65, 477-488.
- Donahue, M. J. (1985). Intrinsic and extrinsic religiousness: Review and meta-analysis. *Journal of Personality and Social Psychology*, 48, 400-419.
- Fabriger, L. R., Wegener, D. T., MacCullum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4, 272-299.
- Fenzel, L. M. (2005). Multivariate analyses of predictors of heavy episodic drinking and drinking-related problems among college students. *Journal of College Student Development*, 46, 126-40.
- Fetzer Institute/National Institute on Aging (1999). *Multidimensional measurement of religiousness/spirituality for use in health research: a report of the Fetzer Institute/National Institute on Aging working group*. Kalamazoo, MI: John E. Fetzer Institute
- Forthun, L. F., Bell, N. J., Peek, C. W., & Sun, S. (1999). Religiosity, sensation seeking, and alcohol/drug use in denominational and gender contexts. *Journal of Drug Issues*, 29, 75-90.
- Galen, L. W. & Rogers, W. M. (2004). Religiosity, alcohol expectancies, drinking motives and their interaction in the prediction of drinking among college students. *Journal of Studies on Alcohol*, 65, 469-476.
- George, L. K., Larson, D. B., Koenig, H. G., & McCullough, M. E. (2000). Spirituality and health: What we know, what we need to know. *Journal of Social and Clinical Psychology*, 19, 102-116.
- Gilles, D. M., Turk, C. L., & Fresco, D. M. (2006). Social anxiety, alcohol expectancies, and self-efficacy as predictors of heavy drinking in college students. *Addictive Behaviors*, 31, 388-398.
- Gleason, N. A. (1994). College women and alcohol: a relational perspective. *Journal of American College Health*, 42, 279-289.
- Gorsuch, R. L. & McPherson, S. E. (1989). Intrinsic/extrinsic measurement: I/E-revised and single-item scales. *Journal for the Scientific Study of Religion*, 51, 65-83.
- Gottfredson, D. C., & Koper, C. S. (1996). Race and sex differences in the prediction of drug use. *Journal of Consulting and Clinical Psychology*, 64, 305-313.
- Grunbaum, J. A., Tortolero, S., Weller, N., & Gingis, P. (2000). Cultural, social, and intrapersonal factors associated with substance use among alternative high school

- students. *Addictive Behaviors*, 25, 145-151.
- Hackney, C. H. & Sanders, G. S. (2003). Religiosity and mental health: A meta-analysis of recent studies. *Journal of the Scientific Study of Religion*, 42, 43-55.
- Haerich, P. (1992) Premarital sexual permissiveness and religious orientation. A preliminary investigation. *Journal for the Scientific Study of Religion*, 31, 361-365.
- Ham, L. S., & Hope, D. A. (2006). Incorporating social anxiety into a model of college problem drinking: Replication and extension. *Psychology of Addictive Behaviors*, 20, 348-355.
- Harju, B. L. & Bolen, L. M. (1998). The effects of optimism on coping and perceived quality of life of college students. *Journal of Social Behavior and Personality*, 13, 185-200.
- Hill, P. C. (2005). Measurement in the psychology of religion and spirituality. In Paloutzian, R. F. & Park, C. L. (Eds.) *Handbook of the Psychology of Religion* (pp. 43-61). New York: Guilford Press.
- Hill, P. C., Pargament, K. I., Hood, R. W., McCullough, M. E., Swyers, J. P., Larson, D. B. et al. (2000). Conceptualizing religion and spirituality: Points of commonality and points of departure. *Journal for the Theory of Social Behavior*, 30, 51-77.
- Hood, R. W., & Belzen, J. A. (2005). Research methods in the psychology of religion. In Paloutzian, R. F. & Park, C. L. (Eds.) *Handbook of the Psychology of Religion* (pp. 43-61). New York: Guilford Press.
- Ichiyama, M. A. & Kruse, M. I. (1998). The social contexts of binge drinking among private university freshman. *Journal of Alcohol and Drug Education*, 44, 18-33.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2004). *Monitoring the Future national survey results on drug use, 1975-2003. Volume II: College students and adults ages 19-45*. Bethesda, MD: National Institute on Drug Abuse. Retrieved on May 31, 2005 from <http://www.monitoringthefuture.org/pubs.html>
- Kendler, K. S., Liu, X., Gardner, C. O., McCullough, M. E., Larson, D., & Prescott, C. A. (2003). Dimensions of religiosity and their relationship to lifetime psychiatric and substance use disorders. *American Journal of Psychiatry*, 160, 496-503.
- Koenig, H. G., McCullough, M. E., & Larson, D. B. (2001) *Handbook of religion and mental health*. New York: Oxford University Press.
- Levin, J. S. (1996). How religion influences morbidity and health: Reflections on natural history, salutogenesis and host resistance. *Social. Science and Medicine*, 43, 849-864.
- MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, 1, 173-181.
- Majer, J. M., Jason, L. A., Ferrari, J. R., Olson, B. D., & North, C. S. (2003). Is self-mastery always a helpful resource? Coping with paradoxical findings in relation to optimism and abstinence self-efficacy. *The American Journal of Drug and Alcohol Abuse*, 29, 385-399.
- Mason, W. A. & Windle, M. (2002). A longitudinal study of the effects of religiosity on adolescent alcohol use and alcohol-related problems. *Journal of Adolescent Research*, 17, 346-363.
- Miller, J. B. (1997). Clinic nurses: confronting campus alcohol use on the frontline. *Journal of American College Health*, 45, 205-209.
- Miller, W. R. (1998). Researching the spiritual dimensions of alcohol and other drug problems. *Addiction*, 93, 979-990.
- Morris, E. P., Stewart, S. H., & Ham, L. S. (2005). The relationship between social anxiety disorder and alcohol use disorders: A critical review. *Clinical Psychology Review*, 25, 734-760.

- National Institute Council on Alcohol Abuse and Alcoholism (2002). *A call to action: Changing the culture of drinking at U.S. college campuses* (NIH publication No. 02-5010). Washington, DC: U.S. Government Printing Office.
- Pargament, K. I. (1999). The psychology of religion and spirituality? Yes and no. *The International Journal for the Psychology of Religion*, 9, 3-16.
- Park, H., Bauer, S., & Oescher, J. (2001). Religiousness as a predictor of alcohol use in high school students. *Journal of Drug Education*, 31, 289-303.
- Patock-Peckham, J. A., Hutchinson, G. T., Cheong, J., & Nagoshi, C. T. (1998). Effect of religion and religiosity on alcohol use in a college student sample. *Drug and Alcohol Dependence*, 49, 81-88.
- Perkins, H. W. (1985). Religious traditions, parents, and peers as determinants of alcohol and drug use among college students. *Review of Religious Research*, 27, 15-31.
- Plante, T. G. & Sharma, N. K. (2001). Religious faith and mental health outcomes. In T. G. Plante & A. C. Sherman (Eds.), *Faith and health: Psychological perspectives* (pp. 15-52). New York: Guilford Press.
- Plante, T. G. & Sherman, A. C. (2001). Research on faith and health. In T. G. Plante & A. C. Sherman (Eds.), *Faith and health: Psychological perspectives* (pp. 1-12). New York: Guilford Press.
- Plante, T. G., Yancey, S., Sherman, A., & Guertin, M. (2000). The association between strength of religious faith and psychological functioning. *Pastoral Psychology*, 48, 405-413.
- Quigley, L. A. & Marlatt, G. A. (1996). Drinking among young adults. *Alcohol Health & Research World*, 20, 185-191.
- Salsman, J. M., Brown, T. L., Brechting, E. H., & Carlson, C. R. (2005). The link between religion and spirituality and psychological adjustment: The mediating role of optimism and social support. *PSPB*, 31, 522-535.
- Scheier, M. F. & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychology*, 4, 219-247.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078.
- Schmid, H. (1998). Swiss adolescent drug users' and nonusers' optimism about their future. *Journal of Applied Social Psychology*, 28, 1889-1902.
- Schulenberg, J., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1994). High school educational success and subsequent substance use: A panel analysis following adolescents into young adulthood. *Journal of Health and Social Behavior*, 35, 45-62.
- Schutte, J. W., & Hosch, H. M. (1996). Optimism, religiosity, and neuroticism: A cross-cultural study. *Personality and Individual Differences*, 20, 239-244.
- Seybold, K. S. & Hill, P. C. (2001). The role of religion and spirituality in mental and physical health. *Current Directions in Psychological Science*, 10, 21-24.
- Simons, J. S., Gaher, R. M., Correia, C. J., Hansen, C. L., & Christopher, M. S. (2005). An affective-motivational model of marijuana and alcohol problems among college students. *Psychology of Addictive Behaviors*, 19, 326-334.
- Smith, T. B., McCullough, M. E., & Poll, J. (2003). Religiousness and depression: Evidence for a main effect and the moderating influence of stressful life events. *Psychological Bulletin*, 4, 614-636.
- Slutske, W. S. (2005). Alcohol use disorders among US college students and their non-college-

- attending peers. *Archives of General Psychiatry*, 62, 321-327.
- Strack, S., Carver, C. S., & Blaney, P. H. (1987). Predicting successful completion of an aftercare program following treatment for alcoholism: The role of dispositional optimism. *Journal of Personality and Social Psychology*, 53, 579-584.
- Strawbridge, W. J., Shema, S. J., Cohen, R. D. & Kaplan, G. A. (2001). Religious attendance increases survival by improving and maintaining good health behaviors, mental health and social relationships. *Annals of Behavioral Medicine*, 23, 68-74.
- Studer, M., & Thornton, A. (1987). Adolescent religion and contraceptive usage. *Journal of Marriage and the Family*, 49, 117-128.
- Substance Abuse and Mental Health Services Administration [SAMHSA] (2003). *2003 state estimates of substance use*. Retrieved June 1, 2005, from <http://www.oas.samhsa.gov/2k3State/ch3.htm>
- Templin, D. P. & Martin, M. J. (1999). The relationship between religious orientation, gender, and drinking patterns among Catholic college students. *College Student Journal*, 33, 488-496.
- Thoreson, C. E. & Harris, A. H. (2002). Spirituality and health: What's the evidence and what's needed? *Annals of Behavioral Medicine*, 24, 3-13.
- Thoreson, C. E., Harris, A. H., & Oman, D. (2001). Spirituality, religion, and health. In T. G. Plante & A. C. Sherman (Eds.), *Faith and health: Psychological perspectives* (pp. 15-52). New York: Guilford Press.
- Thorton, A., & Camburn, D. (1989). Religious participation and adolescent sexual behavior and Attitudes. *Journal of Marriage and the Family*, 51, 641-653.
- U. S. Department of Health and Human Services (2000). *Health people 2010: Understanding and improving health and objectives for improving health*. 2nd edition, volume 2, Goal 26-11. U.S. Department of Health and Human Services. Washington, DC: U. S. Government Printing Office. Available online at <http://www.health.gov/healthypeople/>. Accessed on May 31, 2005.
- Ventis, W. L. (1995). The relationships between religion and mental health. *Journal of Social Issues*, 51, 33-48.
- Vicary, J. R. & Karshin, C. M. (2002). College alcohol abuse: A review of the problems, issues, and prevention approaches. *The Journal of Primary Prevention*, 22, 299-331.
- Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002a). Trends in college binge drinking during a period of increased prevention efforts: Findings from 4 Harvard School of Public Health College and Alcohol Study surveys: 1993-2001. *Journal of American College Health*, 20, 203-217.
- Wechsler, H., Lee, J. E., Nelson, T. F., Kuo, M. (2002b). Underage college students' drinking behavior, access to alcohol, and the influence of deterrence policies: Findings from the Harvard School of Public Health College Alcohol Study. *Journal of American College Health*, 50, 223-236.
- White, J. M., Wampler, R. S., & Fischer, J. L. (2001). Indicators of spiritual development in recovery from alcohol and other drug problems. *Alcoholism Treatment Quarterly*, 19, 19-35.
- Wills, T. A., Yaeger, A. M., & Sandy, J. M. (2003). Buffering effect of religiosity for adolescent substance use. *Psychology of Addictive Behavior*, 17, 24-31.
- Zinnbauer, B. J. & Pargament, K. I. (2005). Religiousness and spirituality. In Paloutzian, R. F. & Park, C. L. (Eds.) *Handbook of the Psychology of Religion* (pp. 21-42). New York:

Guilford Press.

Zinnbauer, B. J., Pargament, K. I., & Scott, A. B. (1999). The emerging meanings of religiousness and spirituality: Problems and prospects. *Journal of Personality*, 67, 889-919.

Benjamin Collier
DOB: June 24, 1981
Birth Place: Dallas, Texas

I. Education:

Bachelor of Arts B.A. Summa cum Laude, May 2003
Department of Psychology
Asbury College
Wilmore, KY 40390

II. Clinical Experience:

Aug. 2006 – Present **Graduate Therapist**
Center for Counseling
Asbury College
Wilmore, KY

Aug. 2005 – August 2006 **Graduate Therapist**
University Counseling and Testing Center
University of Kentucky
Lexington, KY

Aug. 2005 – Present **Graduate Therapist**
Jesse G. Harris Psychological Services Center
University of Kentucky
Lexington, KY

Mar. 2004 – Aug. 2004: **Mental Health Associate**
Eastern State Hospital
Gragg 2
Lexington, KY

Jan. 2003 – Oct. 2003: **Mental Health Associate**
Ridge Behavioral Health System
Youth Services
Lexington, KY
Supervisor: Scott Kline, R.N.

III. Scholastic and Professional Honors

Scholastic Honors: Asbury College Dean's List 1999 - 2003
Psi Chi 2002 - 2003

IV. Publications

Brechting, E.H., Salsman, J.M., Collier, B., & Carlson, C.R. (2006). Moving forward: A better understanding of the relationship between religiousness and alcohol problems. *Alcoholism: Clinical and Experimental Research*, 30 (6), 141.

Salsman, J. M., Brechting, E. M., Brown, T. L., Phillips, C., Collier, B. L., & Carlson, C. R. (2006, March). *Identifying religious and spiritual associations with health: Does one size fit all?* Paper presented at the annual meeting of the Society of Behavioral Medicine.

Benjamin Lee Collier