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The University of Southern Mississippi

COLLEGE STUDENTS' ALCOHOL USE AND RELATED PROBLEMS:  
WHAT MAKES RELIGIOUSNESS A PROTECTIVE FACTOR?

by

Corey Todd Brawner

A Thesis  
Submitted to the Graduate School  
of The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Master of Arts

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May 2015

## ABSTRACT

### COLLEGE STUDENTS' ALCOHOL USE AND RELATED PROBLEMS: WHAT MAKES RELIGIOUSNESS A PROTECTIVE FACTOR?

by Corey Todd Brawner

May 2015

Excessive alcohol use has been recognized as a critical health hazard for college students, particularly for members of social fraternities and sororities. Religiousness and Spirituality (R/S) has received substantial support as a protective factor for alcohol use across many populations. The current study utilized a series of hierarchical regression models to delineate the protective influences of six R/S dimensions on alcohol consumption, harmful drinking patterns, and alcohol-related problems, as well as their moderating effect on the association between Greek membership and alcohol outcomes in a sample of 709 undergraduates from one Christian-affiliated institution and one public university. Public religious participation and intrinsic religious motivation predicted significantly lower alcohol consumption, and intrinsic motivation buffered the association between Greek membership and consumption. Only public participation predicted significantly lower alcohol-related problems and harmful drinking. Implications for treatment and directions for future research are discussed.

## ACKNOWLEDGMENTS

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## LIST OF ABBREVIATIONS

|          |                                 |
|----------|---------------------------------|
| R/S      | Religion and Spirituality       |
| RPub     | Public Religious Participation  |
| RPriv    | Private Religious Participation |
| iMot     | Intrinsic Religious Motivation  |
| eMot     | Extrinsic Religious Motivation  |
| RCopePos | Positive Religious Coping       |
| RCopeNeg | Negative Religious Coping       |
| DSE      | Daily Spiritual Experiences     |
| RSS      | Religious Support Scale         |
| ImpSS    | Impulsive Sensation Seeking     |
| SPS      | Social Provisions Scale         |
| CopeMal  | Maladaptive General Coping      |
| CopeAdap | Adaptive General Coping         |

## CHAPTER I

### INTRODUCTION

#### Alcohol Use, Misuse, and Consequences

Alcohol misuse is a major health issue in the United States. In a national survey of over 43,000 Americans, 71.8% of males and 59.6% of females reported consuming alcohol, but a much larger concern is that nearly half of these individuals also reported binge drinking, that is, consuming more than 4 or 5 drinks within two hours for females and males, respectively (Chen et al., 2006; Chen, Yi, Dawson, Stinson & Grant, 2010). Binge drinking, heavy drinking (>1 drink per day on average for a woman, and >2 drinks per day on average for a man), underage consumption, and consumption by pregnant women is reported to cost the American public \$223.5 billion yearly (Bouchery, Harwood, Sacks, Simon, & Brewer, 2011) and result in as many as 85,000 preventable deaths each year (Mokdad, Marks, Stroup, & Gerberding, 2004).

Alcohol use is at the source of many health and social problems for Americans across the lifespan, but young adults demonstrate the highest rates of alcohol misuse and related problems. Further, college students consume alcohol at even higher rates than their non-college peers (Grant et al., 2004; Slutske, 2005). More than a third of undergraduates report binge drinking two or more times per week (Johnston, O'Malley, Bachman, & Schulenberg 2011; Wechsler, Kuo, Hang, & Dowdall, 2000), and individuals who report binge drinking are 13-19 times more likely develop an alcohol use disorder (Knight et al., 2002). College students also engage in more risky behaviors while drinking. Hingson, Zha, and Weitzman (2009) reported that over three million students drove under the influence of alcohol in 2005, a significant increase since their 1999 study. Students also report higher rates of alcohol-related consequences, including 97,000

sexual assaults, 696,000 physical assaults, academic trouble, unplanned and unprotected sex, accidental injury, and unintentional death (Hingson, Heeren, Winter, & Wechsler, 2005; Mokdad et al., 2004). Further, accidental death due to injury is the leading cause of death in this age group with alcohol contributing to 1,825 student deaths per year (Hingson et al., 2009).

Among college students, individuals affiliated with fraternities and sororities are at even higher risk. Fraternity and sorority members consume higher quantities of alcohol at higher frequencies (Barry, 2007; McCabe et al., 2005; Wechsler & Nelson, 2008). Their use and consequences are greater than non-affiliated students and increase over time of association (Capone, Wood, Borsari, & Laird, 2007; Park, Sher, & Krull, 2008). A national survey of over 3,000 fraternity members found that 86% binge drank in the previous two weeks, 64% binge drank three or more times in the previous two weeks, and respondents consumed an average of 7.1 drinks per drinking occasion (Caudill et al., 2006). Greek members also experience and cause more alcohol-related consequences (Barry, 2007; Caudill et al., 2006; Neighbors et al., 2010).

Previous research has also shown that within the American population, individuals with impulsive or sensation seeking personality traits may be at even higher risk for alcohol-related problems. It is not surprising that impulsivity is thought to rise during adolescence and to persist throughout young adulthood (Littlefield, Sher, & Steinley, 2010; Quinn & Harden, 2013) when alcohol-use and related problems also peak. In a study of delay discounting in college students, Kollins (2003) found that impulsive individuals started using alcohol earlier in the night than less impulsive individuals and reported drinking until unconscious more often. A study of Italian

university students also found that impulsive individuals were more likely to perceive greater alcohol use in peers and report less self-efficacy in resisting pressure to drink (Ciocognani & Zani, 2011). Impulsivity has also been linked with increased likelihood of committing illegal acts or being arrested under the influence of alcohol (White, Tice, Loeber, & Stouthamer-Loeber, 2002), driving at high speeds under the influence of alcohol (Arnett, 1992), using illegal substances, and going to locations known to be unsafe (Mallet & Vignoli, 2007). Dom, Hulstijn, and Sabbe (2006) found that impulsive and sensation seeking individuals were more likely to develop early-onset alcoholism. DSM-IV abuse and dependence have also been shown to be predicted by relatively higher scores of impulsivity and sensation seeking (Ketzenberger & Forrest, 2000; Sher, Bartholow, & Wood, 2000). Furthermore, Quinn and Harden (2013) found that individual differences in impulsivity over time were associated with individual differences in escalating alcohol use from adolescence to early adulthood and that later risk was most evident among those whose impulsivity declined more slowly.

Some research also suggests that individuals with impulsive traits are more likely to join a Greek social organization and that these individuals are at a compounded risk for alcohol-related problems (Kahler, Read, Wood, & Palfai, 2003). Park, Sher, Wood, & Krull (2009) used latent growth modeling to examine a potential model to explain the increased likelihood of impulsive individuals joining a fraternity and found interesting results that extended previous conclusions. Not only were individuals high in impulsivity more likely to engage in heavier pre-college drinking ( $\beta = .34$ ) and more likely to join the Greek system ( $\beta = .34$ ), but the interaction of Greek affiliation and impulsivity was then also positively affiliated with more drastic increases in risky drinking.

Unfortunately, despite the known impairment and negative consequences associated with problematic alcohol-use, as few as 14.6% of adults with an alcohol use disorder (AUD) will ever seek treatment (Cohen, Feinn, Arias, & Kranzler, 2007) with rates as low as 5% for college students (National Institute on Alcohol Abuse and Alcoholism, 2013). Therefore, it is crucial to better identify and understand potential protective factors that may inform development and improvement of both preventive and treatment strategies.

### Religion/Spirituality and Health

One particular protective factor for alcohol misuse and consequences that has received increased attention is religiousness and spirituality (R/S). It is important to note that this study does not define R/S by any single set of practices or beliefs, and evidence does not suggest that any single religious rule system or specific beliefs against alcohol use are the reason for the inverse relationship between R/S and alcohol use (Garretsen, Rodenburg, van de Goor, & van den Eijnden, 2008; Gorsuch, 1995). Rather, previous studies have pointed to several protective factors of R/S that generalize across most religions and cultures, which are the focus of this study. Further, 96% of adults in the United States express some belief in God or a higher power (Princeton Religious Research Center, 1996) and 72% report that their lives are influenced more by religion than any other factor (Bergin & Jensen, 1990). Therefore, knowledge gained from study of religious factors associated with decreases in alcohol misuse and related problems may be generalizable to general public, including non-religious institutions or individuals (Gorsuch, 1995). The major focus of this study is to examine dimensions of R/S that have been posited as protective factors in previous studies discussed below. It is also notable

that religiousness and spirituality have been conceptualized separately and by many definitions over the past several decades. However, both share similar aspects in relation to psychological health, and differentiation was not a focus of this project. Religiousness and spirituality will subsequently be referred to collectively as R/S, unless a given study specifies a distinct measure or definition.

Koenig, King, and Carson (2012) conducted a meta-analysis of 184 studies examining religious involvement and alcohol use from 2000-2010 and rated them on design, sampling method, quality of measures, and statistical analyses. Of the 104 studies judged to be of high quality, 88% reported inverse relationships between religiousness and alcohol use and abuse. Further, The National Center on Addiction and Substance Abuse at Columbia University (2001) examined data from three national surveys and found that adults who did not consider religion to be of importance were twice as likely to use alcohol in general and three times as likely to engage in binge drinking. Regnerus and Elder (2003) examined the relationships between religious attendance, importance of R/S, and alcohol use in a nationally representative sample of 7,789 adolescents in grades seven through twelve from the National Longitudinal Study of Adolescent Health. Sampling was stratified by region, urbanicity, school type, and ethnicity. Religious attendance was measured on a 4-point scale from *never* to *once a week or more*, and questions about importance of R/S were scaled from *not important* to *very important*. While accounting for risk factors (age, race, gender, SES, and temperament) and other protective factors (family satisfaction, positive self-image, level of personal autonomy, parental involvement in child's peer friendships, and school attachment), adolescents who attended religious services or endorsed high importance of R/S at baseline were less

likely to use alcohol ( $B = -.09$  and  $B = -.11$ ). With each unit increase in religious attendance (e.g., increase from *never* to *less than once a month* or *few times a month* to *weekly or more*) and importance of religion (e.g., increase from *not important at all* to *fairly unimportant* or *fairly important* to *very important*), the odds of underage alcohol use declined by 16% and 20%, respectively. Degenhardt, Chiu, Sampson, Kessler, and Anthony (2007) analyzed data for 9,282 adults from the National Comorbidity Survey Replication study. Individuals reported their religious denomination and how important religious beliefs were in their lives on a 4-point scale from low importance to very important (20.5% Low, 25.1% Little, 22.8% Somewhat, 31.7% Very). After accounting for birth cohort, sex, ethnicity, education level, marital status, employment, income, region and urban/rural residence, and religious denomination, individuals who reported religion as very important were significantly less likely than those who placed little or no importance on religion to use alcohol (OR=2.9, 95% CI 1.7-4.9). These large-scale studies provide a sample of the common consensus in research literature supporting a general negative influence of R/S on alcohol use.

#### Dimensions of Religion/Spirituality

R/S is a general term that has been used to represent various aspects of a person's beliefs and thought processes. It has been operationally defined and measured many different ways in past research. Rather than attempting to measure R/S as a single factor or solely with scales measuring attendance and perceived importance, the present study assessed the influence of several dimensions of R/S that have been found to influence alcohol related behaviors in previous research. Previous studies have provided evidence for an inverse relationship between R/S and alcohol-related problems and have suggested

several specific dimensions as best representative of individuals' R/S or as best accounting for the relationship with health. The present study examined six dimensions of R/S: Public Participation, Private Participation, two dimensions of R/S expected to be descriptors of individuals' R/S (i.e., Daily Spiritual Experiences and Religious Motivation), and two dimensions that have been posed as practical explanations for the relationship between R/S and positive health outcomes (i.e., Religious Coping and Religious Support). Each is discussed separately below.

### *Religious Participation*

The simplest and most often measured dimension of R/S in past research has been participation in public and private religious practices. Several studies have reported frequent attendance at religious services to be generally linked with psychological health. However, previous studies measuring only religious participation are inconsistent in their reports, often have clear confounding influences, or present an incomplete picture. Ellison (1991) examined data of approximately 450 individuals from the General Social Survey and found that benefits of religious participation were indirect, resulting primarily from its role in the strengthening of existential certainty. The effects of religious attendance and private participation on life satisfaction were attenuated by 19% and 25% when existential certainty was included in the model. Levin and Markides (1986) found a significant zero-order correlation between religious attendance and subjective health. However, physical capacity mediated the relationship when added to the model. Ellison (1995) also found inconsistent results in data from 2,956 individuals in a sample weighted to represent the 1980 Census demographic profile. The study found that when controlling for social stressors and social support, frequency of church attendance was

more predictive of less depressive symptoms for whites than for African Americans. Further, African Americans were negatively affected by lack of ties to an organized religious group, but whites were not, and private religious activities actually correlated with increased depressive symptoms for both whites and African Americans. Because data were collected at only a single time point, temporal precedence could not be established, and the empirical association may have reflected the fact that many individuals turn to private religious activities in difficult circumstances that might also give rise to depressive symptoms. As a result, Ellison concluded that additional research is clearly warranted to identify specific features of organized religion that are responsible for the hypothesized associations with mental health. Strawbridge, Cohen, Shema, and Kaplan (1997) conducted a 28-year longitudinal study of 6,928 persons aged 16-94 and found significant relationships between frequent religious attendance and smoking cessation ( $OR = 1.90$ ), increased exercise ( $OR = 1.38$ ), increased social contacts ( $OR = 1.58$ ), and marriage stability ( $OR = 1.79$ ) when adjusting for mental and physical well-being. However, these findings were also determined to be evidence of other underlying mechanisms to be further assessed. These studies each generally supported the positive relationship of R/S participation and psychological health but point to the clear need for multidimensional study of R/S.

### *Religiousness Motivation*

Allport and Ross (1967) expanded past the emphasis placed on religious participation when he posed a theory of intrinsic/extrinsic (I/E) religiousness. Intrinsically motivated individuals were described as those who “find their master motive in religion” and bring all other needs into harmony with their beliefs (p. 434).

Extrinsically oriented individuals were theorized to find religion be to be functional and to selectively shape religion to fit other primary needs. Allport's original theory and definitions have been studied and critiqued in the past several decades into what many researchers agree to be fairly accurate descriptors of religious devotion, especially in Western religiosity (e.g., see Koenig, 2011).

Hoge (1972) later developed the Intrinsic Religiousness Scale (IRS) with items based on assessments of participants by religious professionals. In the original study, a positive correlation ( $r = .30$ ) between intrinsic motivation and life satisfaction (LSI-A, Neugarten, Havighurst, and Tobin, 1961) was also reported as evidence of predictive validity. Though not explicitly measured in the IRS, Brown (1964) first suggested and Hoge (1972) acknowledged that extrinsic motivation might be made up of two types, inner and outer, the inner-type representing individuals who view religion as a crutch in times of need and the outer-type representing individuals who use religious membership and attendance for social purposes. Kirkpatrick (1989) analyzed data from several studies using I-E scales and also concluded that extrinsicness should be broken into two categories. Gorsuch and McPherson (1989) then administered the Age-Universal revision of the traditional I/E scale to 771 college students at secular and religious colleges and assessed a three-factor model. EFA supported the 3-factor model and demonstrated a marginal correlation ( $r = .41$ ) between the extrinsic factors. Findings supported a new three-factor structure of intrinsic, socially-oriented extrinsic, and personally-oriented extrinsic types, with neither specific beliefs nor norms as part of the construct conceptualization (Gorsuch, 1994).

Previous literature covering various populations has linked intrinsic motivation (iMot) with better psychological health and lower levels of alcohol consumption while extrinsic motivation (eMot) tends to vary between positive and non-significant correlations. Templin and Martin (1999) examined the relationship between religious motivation and drinking behaviors in a sample of 277 Roman Catholic college students, and reported that iMot correlated negatively with both weekly alcohol consumption ( $r = -.11, p = .037$ ) and alcohol related problems ( $r = -.13, p = .023$ ), but eMot was not significantly associated with either. Further analysis revealed that relationships between iMot and consumption and consequences were both stronger for females ( $r = -.20$  and  $r = -.17$ , respectively) and nonsignificant for males. Turner-Musa and Wilson (2006) examined data from 211 African American undergraduate students and found that students with higher iMot and eMot were more likely to engage in health-promoting behaviors, such as maintaining healthy interpersonal relationships and engaging in positive stress management. Further, iMot and eMot were not moderated by social support, suggesting that they may function as direct protective factors in this population. Masters and Knestel (2011) conducted telephone interviews with 157 randomly contacted individuals from a metropolitan area and examined differences between iMot, eMot, indiscriminately proreligious, and nonreligious individuals. Nonreligious individuals were twice as likely to be current regular drinkers as proreligious individuals (55.8% and 21.1%, respectively). When accounting for age, gender, ethnicity, marital status, and education level, religious motivation remained significant,  $F(3, 48) = 3.67, p = .019$ , and data further revealed that IR ( $M = .62, SD = .45$ ) individuals consumed fewer drinks than both ER ( $M = 1.75, SD = 1.06$ ) and nonreligious individuals ( $M = 1.17, SD = .27$ ).

### *Spiritual Experiences*

Underwood and Teresi (2002) described daily spiritual experiences (DSE) as one's perception of daily interactions with the transcendent, rather than particular beliefs or what might be considered extraordinary experiences (e.g., out-of-body experiences). For example, many individuals report frequent interactions with God, including looking to God for strength, support, or guidance. Further, Ellison and Fan (2008) assessed the relationship between DSE and multiple aspects of psychological well-being. When controlling for demographic characteristics, religious attendance, and prayer in the model, higher DSE remained significantly associated with greater happiness ( $OR_{1998} = 1.38$ ;  $OR_{2004} = 1.28$ ), life excitement ( $OR_{1998} = 1.26$ ;  $OR_{2004} = 1.40$ ), satisfaction with self ( $OR_{2004} = 1.64$ ), and optimism about the future ( $OR_{2004} = 1.71$ ). This suggests not only that DSE has a positive bearing on psychological well-being, but that it also taps aspects of spirituality not accounted for by conventional measures of religious attendance and prayer.

Previous research has also suggested a protective effect for DSE on alcohol use. In a multisite multiethnic study, Underwood and Teresi (2002) analyzed data from 233 adult women and found frequency of DSE to be significantly negatively correlated with alcohol consumption ( $r = -.20$ ), as well as anxiety ( $r = -.39$ ), depression ( $r = -.22$ ), and perceived stress ( $r = -.20$ ). A study of treatment-seeking alcoholics assessed the effect of five aspects of R/S and Alcoholics Anonymous (AA) involvement and found DSE to be the greatest predictor of no heavy drinking at 6-month follow up ( $OR = 1.04$ , 95% confidence interval = 1.01-1.08). The average increase in DSE scores over the 6-week span, about 3 points (out of 96), was relatively small but statistically significant, and

corresponded with an average 12% decrease in odds of heavy drinking (Robinson, Cranford, Webb, and Brower, 2007). In a study of 198 AA and Women for Sobriety participants, Zemore and Kaskutas (2004) utilized structural equation modeling to demonstrate a positive relationship between length of sobriety and DSE while accounting for recovery helping, life helping, community helping, AA involvement, AA achievement, and demographic variables.

### *Religious Coping*

Several studies have demonstrated a significant association between individuals' coping skills and styles with alcohol and other substance use, but various distinct models have been posed to explain individuals' utilization of alcohol's to alleviate distress or regulate emotions (e.g., Armeli et al., 2003; Colder, 2001; Cooper, Frone, Russell, & Mudar, 1995). Individuals most often turn to heavy alcohol use as a coping method when they are faced with stressors but lack alternative, effective coping skills (Britton, 2004; Corbin, Farmer, & Nolen-Hoeskesma, 2013; Rafnsson, Jonsson, & Windle, 2006). Research has also shown that individuals who utilize alcohol as a coping mechanism are at increased risk for alcohol-related problems (Cooper et al., 1995). Despite the amount of research on alcohol use as a coping method, outcomes have been inconsistent, and most researchers agree that other moderators are present in the relationships between stress, coping, and alcohol use.

In the past 20 years, attention to the concept of religious coping as a protective factor has increased. It has been associated with positive mental health outcomes across many different religious groups in times of stress (Koenig et al., 1992, 1995; McRae, 1984; Tix & Frazier, 1998). Pargament (1997) described religious coping as an

individuals' use of religious beliefs to guide problem-solving and relieve negative consequences of stress. Pargament also asserted that religious coping explains unique variance in the psychological well-being beyond above that of nonreligious coping and that religious coping is a necessary factor for individuals' general religious motivation to translate into positive outcomes. In a meta-analysis of 104 studies examining religious coping (Pargament, 1997) and psychological outcomes, Ano and Vasconcelles (2005) reported a moderate effect size (Fisher's  $Z_r = .33$ ) for the relationship between positive religious coping and positive outcomes and a small but significant effect size ( $Z_r = .22$ ) for the relationship between negative religious coping and negative outcomes. Among the studies reviewed, Roesch and Ano (2003) surveyed 127 individuals about personality characteristics, a recent stressful event, perceived cause of the event, and coping methods. Models were constructed to explain the relationships between religious motivation, attribution, coping, spiritual growth, and depression. Spiritually-based coping was found to significantly impact both spiritual growth ( $\beta = .70$  to  $.71$ ) and depression outcomes ( $\beta = -.32$  to  $-.34$ ). Nooney and Woodrum (2002) also found religious coping to be significantly negatively correlated with depression ( $r = -.19$ ), in an examination of data for approximately 1,500 individuals from the 1998 General Social Survey. Congruent with other similar research, when religious coping was broken into positive and negative components, negative coping was significantly positively correlated with depression ( $r = .30$ ). The present study assessed both positive and negative religious coping patterns to assess for similar relationships with alcohol use and related problems

### *Religious Support*

Much like research on coping skills and styles in young populations, previous literature has consistently linked social influence and social support with alcohol misuse and related problems. However, several competing theories have been posed to explain the relationship (e.g., see Barry, 2007; Borsari & Carey, 2001). Some researchers assert that peer influence on alcohol use is best explained by selection effects. That is, individuals share similar alcohol behaviors, not because of peer influence or support, but rather they select each other, to some degree, because of observed similar alcohol use patterns (Capone et al., 2007; Mundt, Mercken, & Zakletskaia, 2012). Others posit that peer influence is best explained by socialization effects. That is, individuals are influenced to drink more or less either passively by modeling (Read, Wood, & Capone, 2005) and perceived norms (Carey, Borsari, Carey, & Maisto, 2006), or actively by alcohol offers, encouragement, and commands (Capone et al., 2007; Wood, Read, Palfai, & Stevenson, 2001).

Some researchers assert that support derived from one's religion and its associated relationships extends beyond that of general social support and demonstrates an additional protective effect. Kahn and Antonucci (1980) referred to the religious system as a support convoy, suggesting that while people making up the convoy change over time, an individual can count on others of like mind to fill the support roles. Further, individuals may benefit from religious support such as belief in prayer by other individuals or supportive actions by God (Hill & Pargament, 2003). Fiala, Bjorck, and Gorsuch (2002) also emphasized that support comes from many contexts with various implications and constructed the Religious Support Scale to assess social support within a

specifically religious context. Religious support was hypothesized to be correlated with general social support but to also account for additional variance in psychological outcomes. As hypothesized, data from the initial sample and a cross-validation sample demonstrated significant correlations between religious support and general social support ( $r = .41$  and  $r = .53$ ,  $p < .001$ ). Canonical analysis was conducted to assess the unique effects of religious support on psychological health when controlling for general social support. Religious support demonstrated a significant effect for life satisfaction in both samples,  $F(12, 484) = 7.68$ ,  $p < .001$  and  $F(12, 172) = 3.70$ ,  $p < .001$ , but the effect for depression was marginal. However, Nooney and Woodrum (2002) analyzed data from the 1998 General Social Survey to assess the effects of attendance, prayer, fundamentalism, religious support, and religious coping on depression, and found that religious support made the strongest impact and was significantly inversely correlated with depression ( $r = -.20$ ).

Cohen, Yoon, and Johnstone (2009) also found positive religious support to be significantly correlated with general mental health ( $r = .33$ ,  $p < .001$ ). Hierarchical regression analysis revealed religious support to be positively associated with mental well-being, explaining an additional 6% of variance after accounting for history of mental health and demographic variables. In a study of 2,370 African American men and women, Debnam, Holt, Clark, Roth, and Southward (2012) also used hierarchical regression to assess the effect of religious support on alcohol use above that of general social support. Demographic variables and general social support were entered in step one of the model, and religious support was entered in step two. Results indicated that

religious support was unrelated to days of consumption per month, but it predicted significantly fewer days of binge drinking ( $\Delta R^2 = .018, p < .01$ ).

### The Present Study

Several psychological studies have examined R/S as a protective factor and have reported a link with positive outcomes, including less alcohol use and fewer related problems. However, many have assessed religiousness only as a dichotomous (yes/no) or categorical (e.g., Protestant, Catholic, Buddhist, etc.) variable, and most reported only generic conclusions. Few have investigated the aspects of religion that may account for the protective effects specifically in regard to alcohol misuse and consequences. Fewer have examined effects of multiple R/S dimensions simultaneously, and almost none have looked directly at these effects in the high risk populations of college students. Therefore, the present investigation aimed to elucidate the effects of previously identified dimensions of R/S (i.e., participation, daily spiritual experiences, religious motivation, religious coping, and religious support) on hazardous alcohol consumption and related consequences in college students. Previous research has also examined fraternity and sorority affiliation as a risk factor for harmful alcohol use and related consequences, but few have assessed the effect of R/S on this relationship. The present study assessed the interaction effect of Greek affiliation and R/S dimensions on students' alcohol use and related consequences. Data from multiple measures also made it possible to distinguish the effects of R/S descriptor variables (e.g., religious motivation and daily spiritual experiences) and more practical components of R/S (e.g., religious participation and religious coping). Lastly, many previous studies examined homogeneous samples, often including individuals from only one religious group or institution. The present study examined demographic group effects in culturally, ethnically, and potentially religiously

heterogeneous samples at two institutions, one private Christian-affiliated and one public non-affiliated.

Based on the results reported in previous literature, eight sets of hypotheses were tested. Males, Whites, and Catholics were predicted to report greater alcohol consumption, alcohol-related consequences, and risky drinking patterns compared to females, non-Whites, and other religious group members. ImpSS was predicted to be positively associated with alcohol consumption, alcohol-related consequences, and harmful drinking patterns. Greek members were predicted to report greater alcohol consumption, alcohol-related consequences, and risky drinking patterns compared to non-Greeks. With one exception, each R/S variable (R<sub>Pub</sub>, R<sub>Priv</sub>, iMot, eMot, DSE, R<sub>CopePos</sub>, and R<sub>SS</sub>) was predicted to be negatively associated with alcohol consumption, alcohol-related consequences, and harmful drinking patterns. R<sub>CopeNeg</sub> was predicted to be positively associated with each alcohol outcome. With one exception, each R/S variable (R<sub>Pub</sub>, R<sub>Priv</sub>, iMot, eMot, DSE, R<sub>CopePos</sub>, and R<sub>SS</sub>) was also predicted to moderate (i.e., buffer) the relationship between Greek membership and alcohol consumption, alcohol-related consequences, and harmful drinking patterns. R<sub>CopeNeg</sub> was predicted to exacerbate the relationship between Greek membership and each alcohol outcome.

General coping was predicted to be negatively associated with alcohol consumption, alcohol-related consequences, and harmful drinking patterns, but religious coping was hypothesized to remain a significant predictor of the alcohol outcomes after accounting for general coping. General social support was predicted to be negatively associated with alcohol consumption, alcohol-related consequences, and harmful drinking

patterns, but religious support was hypothesized to remain a significant predictor of the alcohol outcomes after accounting for general social support. Lastly, students at the Christian-affiliated university were predicted to report lower alcohol consumption, alcohol-related consequences, and risky drinking patterns compared to students at the public university, but variance attributable to R/S variables was not expected to be fully accounted for by institution group membership.

## CHAPTER II

### METHODOLOGY

#### Participants

Participants were a convenience sample of 922 current college students from one private Christian-affiliated university and one public university in the southeastern United States, 709 of which completed the questionnaires fully and as instructed. Participation was restricted to students between 18 and 25 years of age, as the theoretical background and implicative focus of this study is on the traditional college student young adult. Permission to collect data was granted by Institutional

#### Procedure

Data were gathered by two methods. Students at the public university were recruited through the university psychology research participation system (SONA Systems) and completed the self-report survey online via Qualtrics Research Software. Participants were presented with the informed consent statement prior to viewing the questionnaires and indicated their consent to participate by clicking to proceed to the questionnaires.

Students at the private university were recruited from the classrooms of professors who agreed prior to the start of data collection to reserve a portion of class time for administration. Students who agreed to participate were provided a paper form of the questionnaires, the first page of which included the informed consent statement. In effort to maintain the anonymity of respondents, the informed consent document did not prompt students to identify themselves in anyway. Rather, students indicated their implied consent by means of completing the survey or, conversely, exercised their autonomy by

declining to participate. Once received, the documents were delivered to the primary investigator at the University of Southern Mississippi in sealed envelopes, where they were secured in a locked file cabinet until entered manually into an electronic database. Once data were entered, the paper survey documents were shredded.

### Measures

#### *Daily Drinking Questionnaire* (DDQ; Collins, Parks, & Marlatt, 1985)

The DDQ was developed to measure average quantity and frequency of alcohol consumption. Individuals are asked to estimate average consumption for each day of the week for a specified period of time (e.g., past month), making it possible to identify drinking days per average week, average drinks per day, and consumption patterns (e.g., heavy weekend drinking). In the original publication, convergent validity was evinced by a significant correlation ( $r = .50, p = .001$ ) between scores from the DDQ and Cahalan's Quantity-Frequency Index (Cahalan, Cisin, & Crossley, 1969). In a later study, Kivlahan, Marlatt, Fromme, Coppel, and Williams (1990) also reported a significant correlation between scores for the DDQ and a Q-F measure ( $r = .78, p < .001$ ). Morean and Corbin (2008) further evidenced construct validity, reporting significant correlations between DDQ scores and both alcohol-related problems ( $r = .54, p < .001$ ) and tolerance ( $p = .44, p < .001$ ).

In the present study, a composite variable representing the average number of alcoholic beverages consumed per week was estimated by summing the total number of drinks for each day of a typical week, and the number of drinks consumed per week was used as the alcohol consumption outcome in regression analyses.

*Alcohol Use Disorders Identification Test* (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993)

The AUDIT is a 10-item screening tool designed to detect early-phase hazardous alcohol consumption patterns in adults. It utilizes a 5-point response scale ranging from *never* to *daily* in which participants respond to questions about frequencies of their experiences in the conceptual domains of harmful alcohol use, alcohol dependence, and alcohol-related problems. Higher scores indicate greater problematic use, more negative consequences, and likelihood for alcohol dependence.

The AUDIT was developed by the World Health Organization (WHO) for early identification of hazardous and harmful drinking patterns, not only current alcohol use disorders, which distinguishes it from most previous screening tests. Saunders et al. (1993) reported that 10 questions were selected from a 150-item pool based on their ability to distinguish low-risk from harmful drinking, coverage of three conceptual domains (alcohol use, dependence, and related consequences), gender non-bias, and multicultural generalizability determined by a cross-national study in six countries (Australia, Bulgaria, Kenya, Mexico, Norway, and the United States of America). Using receiver operating characteristic (ROC) analysis, the study reported that a cut-off point of 8 achieved 97% sensitivity for identifying hazardous alcohol consumption and 95% for alcohol-related problems in the last year. Corresponding specificity was 78% for hazardous alcohol consumptions and 85% for alcohol problems in the past year. Overall sensitivity and specificity for identifying hazardous and harmful alcohol use were 92% and 94%, respectively, with 100% of currently drinking alcoholics and only three of 678 non-drinkers scoring 8 or more. Conigrave, Hall, and Saunders (1995) also reported a

cut-off point of 8 to yield the best sensitivity and specificity in a sample of 350 patients receiving ambulatory care, detecting 95% of individuals with alcohol-related problems and 94% of those with hazardous alcohol consumption. Furthermore Kokotailo and colleagues (2004) also reported a cut-off score of 8 to be ideal for detecting high-risk drinking in college students with 82% sensitivity and 78% specificity. Reinert and Allen (2002) cited 18 studies that reported AUDIT scores to be internally consistent across diverse samples and settings with a median Cronbach's alpha between .80 and .90.

*Rutgers Alcohol Problems Index (RAPI; White & Labouvie, 1989)*

The RAPI is composed of 23 items designed to assess for young adult problematic drinking. Participants endorse how many times they have experienced each of the consequences in the past year on a 4-point scale from *none* to *more than 5 times*. Higher scores indicate a greater quantity and frequency of negative consequences due to problematic alcohol use.

In the initial development, data were gathered at two time points spanning three years from a non-clinical sample of 1308 young males and females. Individuals indicated how often they had experienced items on a list of 53 symptoms or consequences of alcohol use. Factor analyses were conducted and a 23-item scale was deemed most appropriate with six items representing social problems, four representing role failure, six representing dependence, four representing damage to self-esteem, and three reflecting acute effects of intoxication. Data from the initial sample demonstrated adequate internal reliability ( $\alpha = .92$ ) and a 3-year stability coefficient of .40. A subsequent study with multiple age groups also reported adequate internal consistency coefficients of .91-.92 for 18, 21, and 30-year-old samples (White, Labouvie, & Papadaratsakis, 2005).

Since the original publication, work has been done to improve the measure. Neal, Corbin, and Fromme (2006) computed a series of 2-parameter IRT models to examine item functioning longitudinally for male and female groups, and reduced the measure to 18 items. Total scores for the sample of 2077 college students were reported to correlate significantly with both drinks per drinking day ( $r = .51, p < .001$ ) and drinking frequency ( $r = .54, p < .001$ ), evincing convergent validity.

Work has also been done to reduce the potential for gender bias. Earleywine, LaBrie, and Pedersen (2008) addressed the issue of potential gender bias by assessing differential item functioning (DIF). Items 3, 17, and 19 were identified as biased against men and items 17 and 18 were identified as biased against women and were removed from the scale. Items 4 and 11 were also removed from analysis, because they did not satisfy requirements for interval scaling for Rasch model analysis. The revised scale (S-RAPI) was comprised of the remaining 16 items. As evidence of scale improvement, subsequent analyses revealed that the S-RAPI correlated significantly stronger than the dropped items with scores on the College Alcohol Problem Scale- revised ( $r = .63$  and  $r = .56, Z = 7.50, p < .001$ ), Timeline Follow Back ( $r = .41$  and  $r = .21, Z = 4.92, p < .001$ ), and a Quantity-Frequency Measure ( $r = .46$  and  $r = .36, Z = 4.30, p < .001$ ). Though seven items were removed, internal consistency was only marginally reduced from .88 to .85, and the S-RAPI correlations with other measures were all within .01 of correlations for the full scale. Reports supporting alterations to the full RAPI item pool are recognized but are also inconsistent, the present study included all 23 items.

*Daily Spiritual Experience Scale (DSES; Underwood and Teresi, 2002)*

The DSES is a 16-item scale designed to measure an individual's perception of and interaction with the transcendent in daily life, assessing individuals' perceptions of experiences rather than particular beliefs. Using a 6-point scale from *never or almost never* to *many times a day*, individuals indicate how often they interact with the Divine or transcendent in several aspects involved in spiritual experience including awe, gratitude, mercy, inner peace, and compassion for others. Underwood and Teresi (2002) reported that higher DSES scores indicate a perception of greater interaction, but are not intended to imply a better or more desirable spirituality. Nevertheless, some types of DSE may correlate with well-being and contribute positively to both physical and psychological well-being.

Items were first compiled from individual interviews, focus groups, and review of previously published scales attempting to measure aspects of spiritual experience. Initial revision was conducted in accordance with individual interviews about the perceived meaning of each item and a review by individuals of various spiritual orientations at a meeting of the World Health Organization Working Group on Spiritual Aspects of Quality-of-Life. The original development study analyzed data from three studies regarding health outcomes to calculate initial psychometric properties. DSES scores demonstrated high internal consistency ( $\alpha = .94 - .95$ ). Factor analysis was conducted and best supported a single-factor model for the final pool of 16-items. As evidence of construct validity, data demonstrated that individuals who reported no religious affiliation scored considerably higher, meaning they reported less frequent daily spiritual experiences ( $M = 25.91$ ), than respondents who indicated Protestant, Catholic, Christian,

or Other religious affiliation ( $M = 16.35-19.96$ ). Data from other studies in various cultures have been used to further assess the psychometric properties. Data have demonstrated high internal consistency in studies of French and Chinese populations ( $\alpha \geq 0.89$ ), as well as adequate test-retest reliability (Bailly & Roussiau, 2010; Ng et al., 2009).

*Brief Measure of Religious Coping* (Brief RCOPE; Pargament, Smith, Koenig, & Perez, 1998)

The full-length RCOPE was developed to be a broad measure of religious coping. Items were collected from numerous sources and were then classified into 21 subscales. Items retained for further evaluation were classified with near 100% agreement by a group of graduate students, and each subscale consisted of five items on a 4-point Likert response scale ranging from 0 (not at all) to 3 (a great deal). Samples of 551 elderly hospital patients and 540 college students who reported experiencing serious distressing events within the past three years were assessed to analyze the RCOPE scores for reliability and validity. Factor analysis was utilized to verify the number of factors represented by the items, and after combining two of the originally proposed factors, a 16-factor model was confirmed with no items crossloading significantly (i.e., no items correlated greater than .30 with two or more factors), with the exception of one item. Independent samples t-tests showed that the college and hospital samples differed significantly in their utilization of religious coping. The hospital sample reported significantly greater use of 12 of the 16 religious coping factors, and the college sample tended to report greater use of a negative coping style. Results also indicated acceptable

internal consistency ( $\alpha > .80$ ) for all but two subscales in the college sample (Pargament, Koenig, & Perez, 2000).

The present study utilized the Brief RCOPE, a 14-item version consisting of questions chosen specifically to assess and differentiate positive and negative religious coping strategies. Using a 4-point scale from *not at all* to *a great deal*, participants indicate how often they utilize each coping method in times of stress. Positive strategies include seeking spiritual connection and spiritual support, seeking forgiveness and religious help to forgive others, collaborating with God, reappraising a situation from a religious standpoint, and focusing on religion. Negative strategies include trying to derive meaning in terms of punishment or abandonment by God, God not loving them or having power to make a difference, work of an evil force, or abandonment by the church. Items were chosen from the full RCOPE based on representation of the original subscales and by their factor loadings in a 2-factor model. Cronbach's alpha was calculated as a measure of internal consistency for the new positive and negative coping factors ( $\alpha=.90$  and  $.81$ , respectively). Correlations between the positive and negative scales were relatively low ( $r = .17$ ), supporting scale distinction (Pargament, Smith, Koenig, and Perez, 1998). For this study, positive and negative coping scale scores were calculated and assessed separately in the regression models.

*Religious Orientation Scale-Revised (I/E-R; Gorsuch & McPherson, 1989)*

The I/E-R is a 14-item scale designed to measure individuals' extrinsic and intrinsic religious orientation. Using a 5-point scale from *strongly disagree* to *strongly agree* participants indicate the extent to which they agree with each state. Higher scores on each scale indicate a greater intrinsic or extrinsic motivation to practice one's religion.

Religious Orientation was originally defined by Allport (1963, 1966). Gorsuch and Venable (1983) revised the original Allport and Ross (1967) scales to improve item wording and readability for individuals at all education levels and published the Age-Universal Scale. Gorsuch and McPherson (1989) reexamined the factor structure and published the I/E-R with two primary revisions to the Age-Universal Scale. First, the original Extrinsic (eMot) orientation factor was split into two subfactors, Personally Oriented Extrinsicness and Socially Oriented Extrinsicness, based on Kirkpatrick's (1989) recommendations from reanalysis of several studies. Second, six items were discarded based on results of factor analyses. Eight items were retained to measure iMot, and six items were retained for eMot. Each item is measured on a 5-point scale (*strongly disagree to strongly agree*), resulting in range of 8-40 for iMot and 6-30 for eMot.

In the preliminary reliability and validity study, the revised measure was administered to 771 college students at religious and secular universities in California. The mean score for iMot was 37.2 with a standard deviation of 5.8, and the mean score for eMot was 25.6 with a standard deviation of 5.7. Confirmatory factor analysis was used to confirm the factor structure and demonstrated few items loading on more than one factor. Reliability estimates for the measure were  $\alpha = .83$  for iMot and  $\alpha = .65$  for eMot. While reliability estimates were not ideal, the authors chose to maintain the instrument as it was because they considered reliability sufficient, and the shortened 14-item structure made administration for relatively large samples more feasible. In the present study, iMot and eMot scales were entered and assessed separately in the regression model (Gorsuch & McPherson, 1989)

*Religious Support Scale* (RSS; Fiala, Bjorck, & Gorsuch, 2002)

The RSS is a 21-item instrument developed to measure individuals' perception of social support within the context of religious involvement. Using a 5-point response scale from *strongly disagree* to *strongly agree*, individuals indicate the extent to which they agree with each statement about their perceived support. Higher scores indicate greater perception of support from one's congregation, clergy, or God.

153 items were initially generated (51 items per subcategory), based on Weiss' (1974) six areas of social provision and Cutrona and Russell's (1987) model of general social support. Content validity was evaluated by a supervising psychologist and six psychology graduate students who rated each item's fit with the areas of social provision on a five-point scale (1 = not representative to 5 = representative). The top 33 items were selected for each source of support (e.g., I feel appreciated by God; I feel appreciated by others in my congregations; I feel appreciated by my church leaders). Finally, the 99 items were rated again for content validity, and a final pool of 72 items was included in the initial validation study.

Data were collected from a main sample of 249 individuals and later from a cross-validation sample of an additional 93 individuals. A series of factor analyses were used to reduce the item pool to 21 items, and each step of the analyses supported the hypothesized three-factor structure. Upon examining item-factor correlations, each item correlated strongest with its intended factor. RSS total scale scores demonstrated adequate internal consistency ( $\alpha = .91$ ), as did the congregation, God, and clergy support subscales ( $\alpha = .91, .75, \text{ and } .90$ , respectively). Data from the cross validation sample were

analyzed using confirmatory multiple group factor analysis and also demonstrated adequate internal consistency ( $\alpha = .88, .84, \text{ and } .92$ )

Importantly, Bjorck and Maslim (2011) assessed the validity and reliability of scores for the RSS with non-Christian individuals. Some terminology and definitions used in the instructions and some questions were revised, and data were collected from a sample of 549 Muslim women. Using factor analysis to reassess the latent structure, Bjorck and Maslim reported a factor structure identical to that of Fiala and colleagues' (2002) original RSS publication, which supported the use of the RSS in non-Christian populations. The present study utilized instructions and item wording reported by Bjorck and Maslim (2011) and calculated a total score to assess respondents' perception of overall religious support.

*Impulsive Sensation Seeking Scale* (ImpSS Scale; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993)

The ImpSS scale consists of 19 items designed to assess individuals' impulsive sensation seeking traits without mention of specific activities, including alcohol use. Participants indicate whether they think each item applies to them on a 2-point True/False response scale. Items form two subscales, impulsivity and sensation seeking, that load onto a single ImpSS factor. The Sensation Seeking subscale consists of eleven items worded to assess individuals' preference for change and novelty, while the Impulsivity subscale consists of eight items to address individuals' tendency to act without thinking or planning.

ImpSS was constructed as one of five scales on the third form of the Zuckerman Kuhlman Personality Questionnaire (ZKPQ-III). 100 items were administered to 589

participants, and data were factor analyzed by principal components analysis and Varimax rotation. 89 total items were retained for the ZKPQ-III, including the 19 ImpSS items. Each correlated at least .30 with its intended factor, and there were no significant cross-loadings. The revised version was then administered to samples of 740 and 187 undergraduates to further assess the psychometric properties. ImpSS scores from both samples demonstrated adequate internal consistency ( $\alpha = .77-.82$ ) and correlated significantly only with the Aggression-Hostility factor ( $r = .25-.29, p < .01$ ). As evidence of convergent validity, ImpSS scores correlated significantly with the Impulsivity scale of the Buss-Plomin Temperament scales (Buss & Plomin, 1975;  $r = .70, p < .01$ ), Zuckerman's (1979) Sensation Seeking Scale (SSS-V;  $r = .66, p < .01$ ), and Block's Ego-Control scale (Block & Block, 1980;  $r = .63, p < .01$ ). Zuckerman (2007) also stated that ImpSS improved on the SSS-V by excluding culture-specific references and outdated terminology.

The usefulness of ImpSS has also been demonstrated in other populations and in the assessment of risky and addictive behaviors. Stephenson, Hoyle, Palmgreen, and Slater (2003) assessed the psychometric properties of scores from several short form impulsivity measures and reported more favorable internal consistency for ImpSS scores ( $\alpha = .86$ ) than for scores on the Brief Sensation Seeking Scale (BSSS; Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002;  $\alpha = .74$ ). McDaniel and Mahan (2008) utilized structural equation modeling to examine data from 201 undergraduates and 256 non-student adults to assess the concurrent validity of ImpSS. Data from both samples demonstrated adequate internal consistency ( $\alpha = .81$  and  $\alpha = .80$ , respectively), and ImpSS scores were strongly correlated with both the Sensation Seeking Scale

(Zuckerman, 1979;  $r = .73-.76$ ) and the Change Seeking Index short-form (Steenkamp & Baumgartner, 1995;  $r = .55-.56$ ) which measures a form of sensation seeking but not impulsivity. As further evidence of concurrent validity, SEM analyses demonstrated a strong relationship between latent factors SSS-V and ImpSS, with both Imp and SS loading strongly on the latent factor ImpSS. ImpSS scores also demonstrated significant association with addictive behaviors. Scores were significantly positively related with alcohol use ( $r = .32, p < .01$ ), smoking ( $r = .23, p < .01$ ), and gambling ( $r = .12, p < .05$ ). The present study included ImpSS as a covariate in regression analyses to account for its influence on alcohol related behaviors.

#### *Brief Cope* (Carver, 1997)

The Brief COPE is a 28 item self-report measure designed to assess 14 coping styles: Active Coping, Planning, Use of Emotional Support, Use of Instrumental Support, Positive Reframing, Acceptance, Religion, Humor, Venting, Denial, Substance Use, Behavior Disengagement, Self-distraction, and Self-blame. Using a 4-point scale from *not at all* to *a great deal*, participants indicate to what extent they utilize each method of coping in times of stress.

Brief Cope terms were adapted from the original full COPE (Carver, Scheier, & Weintraub, 1989) based on factor loadings and item-clarity. The Brief COPE was initially administered at three time points over the course of one year to 168 community residents recovering from Hurricane Andrew. 126 individuals fully completed all three administrations. Though the sample was relatively small, exploratory factor analysis was conducted to assess the factor structure of data for the new item pool. In short, the factor structure was adequately similar to the full COPE structure. The only discrepancies included Venting and Self-Distraction scales loading onto a single factor, Denial and

Self-Blame scales loading on a single factor, and the two Acceptance items cross-loading onto separate factors but also significantly on their shared Acceptance factor. To assess internal consistency, alpha reliabilities were calculated for each administration then averaged. Though each scale is comprised of only two items, all scales met or exceeded reliability coefficients of .50 which is generally agreed upon as acceptable for research purposes (Nunnally, 1978). Further, all scales except for Venting, Denial, and Acceptance exceeded .60.

Previous literature has regarded scales one through eight as adaptive coping and scales nine through fourteen as maladaptive coping (Meyer, 2001). Previous studies have also linked the adaptive coping scales with positive outcomes while maladaptive scales have been associated with negative outcomes (Carver et al., 1993). In the present study, all 28 items were administered, and Brief COPE subscales were then aggregated into higher-order scales, adaptive and maladaptive coping (Khazem, Law, Green, & Anestis, 2014), for comparison with positive and negative coping scales of the RCOPE.

*Social Provisions Scale* (SPS; Cutrona & Russell, 1987)

The SPS is a 24-item self-report measure designed to assess individuals' perception of six dimensions of social support outlined by Weiss (1974): Guidance, Reliable Alliance, Reassurance of Worth, Attachment, Social Integration, and Opportunity for Nurturance. Using a 4-point scale from *strongly disagree* to *strongly agree*, participants indicate to what extent they feel each statement applies to them. Half of the items are worded to describe the presence of a type of support while the other half are worded to describe the absence of a type of support. After reverse scoring negative items, all items are summed to yield a total score with higher scores indicating perceptions of greater social support.

The current version of the SPS was developed as an adaptation of the original form in effort to improve score reliability. Two items (one positively worded and one negatively worded) were added to each of the six scales. The revised version was then administered to 1,792 individuals in three samples: undergraduates, public school teachers, and nurses. Data demonstrated adequate internal consistency across the three samples for all subscales ( $\alpha = .65-.76$ ) and the total score ( $\alpha = .92$ ). To assess the convergent and divergent validity of SPS scores, Cutrona and Russell (1987) administered the SPS, Social Support Questionnaire (Sarason et al., 1983), Index of Socially Supportive Behaviors (Barrera, Sandler, & Ramsay, 1981), a measure of attitudes toward use of social support (Eckenrode, 1983), Marlow & Crowne Social Desirability Inventory (Crowne & Marlowe, 1960), the Beck Depression Inventory (Beck et al., 1961), and the Eysenck Personality Inventory (Eysenck & Eysenck, 1975) to 242 undergraduates. SPS scores correlated significantly positively with each of the other social support measures ( $r = .35-.46, p < .001$ ), and negatively with depression ( $r = -.278, p < .001$ ) and neuroticism ( $r = -.20, p < .01$ ). Notably, SPS scores also correlated significantly with Introversion-extraversion ( $r = .29, p < .001$ ), suggesting a possible link between individuals' introverted/extraverted personality traits and perceptions of social support. SPS scores also demonstrated a statistically significant but practically marginal correlation with social desirability ( $r = .124, p < .05$ ). More recent studies have further reported adequate score properties for the SPS. Fiala et al. (2002) supported the psychometric reliability and utility of SPS scores in a religious affiliated sample. SPS total scores demonstrated adequate score reliability ( $\alpha = .92$ ) and were significantly positively correlated with religious support ( $r = .41$  to  $.53, p < .001$ ).

### *Public and Private Religious Participation*

Frequency of public religious attendance and private religious participation were assessed using the Organizational Religiousness and Private Religious Practices subscales of the Brief Multidimensional Measure of Religiousness/Spirituality (Fetzer Institute, 2003). Participants responded to questions inquiring about their public and private religious practices on a 9-point scale from *never* to *several times a week*.

### *Demographic Questions*

Participants were asked to indicate their age, gender, ethnicity, academic institution, class, religious affiliation, fraternity/sorority membership status.

### *Quality Assurance Items*

Five quality assurance items were included in the questionnaire instructing participants to respond with a specified answer choice. If an individual responded incorrectly to three or more items, indicating inattention to item content, the case was removed.

## CHAPTER III

### ANALYSES AND RESULTS

#### Preliminary Analyses

Data were first assessed for missing values and attention to item content. 922 individuals began the survey; however, 56 participants did not complete the instrument and were removed listwise from further analysis. 156 cases answered three or more quality assurance items incorrectly and were thus excluded from further analyses. One 26-year-old participant was also excluded from analyses. Therefore, the final dataset consisted of 709 participants. A majority of participants attended the larger, public university (499; 70.4%), and 176 participants (24.8%) were Greek members. 541 (76.3%) were female, and a large majority of the sample were White (477; 67.3%) or African American (185; 26.1%). 561 (79.1%) participants reported practicing a Protestant religion while 75 (10.6%) were Catholic and 53 (7.5%) reported no religious beliefs (i.e., atheism, agnosticism, or none).

Data were assessed for univariate normality using measures of central tendency, skewness and kurtosis values (Table 1), and frequency histograms. The Shapiro-Wilk test, Kolmogorov-Smirnov test, or z-score test were not utilized to determine statistically significant departures from normality, because large sample sizes necessarily result in small standard errors, causing the null hypothesis to be rejected for distributions that may not substantially differ from normality (Micceri, 1989; West, Finch, & Curran, 1995). Kline (2005) suggests that levels of skewness less than three and kurtosis less than ten are unlikely to be problematic. DDQ and RAPI scores were determined to be significantly skewed (positive) and leptokurtic, which was expected given the large proportion of

Table 1

*Means and Standard Deviations for Study Variables*

| Variable<br>(Possible Range) | Men         | Women       | Private<br>University | Public<br>University |
|------------------------------|-------------|-------------|-----------------------|----------------------|
|                              | Mean/SD     | Mean/SD     | Mean/SD               | Mean/SD              |
| R <sub>Pub</sub> (0 to 18)   | 10.23/4.74  | 10.61/4.44  | 13.96/2.70            | 9.08/4.33            |
| R <sub>Priv</sub> (0-29)     | 13.57/6.14  | 14.80/6.30  | 13.62/5.65            | 14.88/6.50           |
| iMot (8-40)                  | 29.10/7.00  | 30.63/6.55  | 34.24/4.78            | 28.66/6.69           |
| eMot (6-30)                  | 16.01/4.91  | 16.99/4.71  | 15.74/4.07            | 17.18/4.97           |
| R <sub>CopePos</sub> (7-28)  | 20.36/6.56  | 21.73/6.24  | 23.30/4.48            | 20.62/6.82           |
| R <sub>CopeNeg</sub> (7-28)  | 10.30/4.32  | 10.76/4.38  | 10.71/4.33            | 10.62/4.39           |
| DSE (16-96)                  | 61.98/19.66 | 67.10/19.16 | 70.12/14.16           | 64.17/20.92          |
| RSS (21-105)                 | 82.70/19.18 | 82.30/19.57 | 88.70/13.23           | 79.78/20.99          |
| ImpSS (0-38)                 | 8.26/4.10   | 7.37/4.47   | 7.24/4.27             | 7.73/4.44            |
| SPS (24-96)                  | 80.23/9.62  | 81.05/10.07 | 84.62/7.05            | 79.30/10.57          |
| CopeMal (9-36)               | 15.86/4.34  | 16.02/4.40  | 15.21/3.80            | 16.29/4.56           |
| CopeAdap (16-64)             | 45.18/7.20  | 45.56/8.40  | 46.38/7.02            | 45.09/8.52           |
| RAPI (0-92)                  | 26.44/5.85  | 27.02/8.23  | 24.46/3.96            | 27.89/8.64           |
| Consumption (0-∞)            | 6.07/10.39  | 3.87/6.10   | 1.14/4.07             | 5.71/8.00            |
| AUDIT (0-46)                 | 4.33/4.37   | 3.89/3.99   | 1.42/2.62             | 5.06/4.11            |

*Note.* R<sub>Pub</sub> = Public Religious Participation; R<sub>Priv</sub> = Private Religious Participation; iMot = Intrinsic Religious Motivation; eMot = Extrinsic Religious Motivation; R<sub>CopePos</sub> = Positive Religious Coping; R<sub>CopeNeg</sub> = Negative Religious Coping; DSE = Daily Spiritual Experiences; RSS = Religious Support Scale; ImpSS = Impulsive Sensation Seeking; SPS = Social Provisions Scale; CopeMal = Maladaptive General Coping; CopeAdap = Adaptive General Coping; RAPI = Rutgers Alcohol Problem Index; Consumption = Daily Drinking Questionnaire Consumption Quantity per Week; AUDIT = Alcohol Use Disorders Identification Test

individuals denying alcohol consumption in the past month. Data were assessed for outliers and multivariate normality using Mahalanobis distance (Meyers, Gamst, & Guarino, 2013) and Cook's Distance. One case was identified with a Mahalanobis distance above the conservative critical value,  $\chi^2$  (df = 22) = 48.27,  $p = .001$ . However, the Cook's distance value for that case ( $D = .19$ ) was substantially below the accepted cutoff value of  $D > 1.0$  (Stevens, 1996); therefore, subsequent analyses were run with the case included and excluded to assess influence on the regression equations, and results did not differ significantly.<sup>1</sup> Thus, though two variables demonstrated univariate non-normality, assumptions of multivariate normality were not violated. Data were also assessed for all other assumptions of regression analysis, including homoscedasticity and non-multicollinearity between predictors. No significant violations were detected.

Internal reliability was also assessed for all measures by calculating Cronbach's alpha (Table 1). All measures exhibited good or excellent internal reliability ( $\alpha = .70-.97$ ) with two exceptions: AUDIT ( $\alpha = .67$ ) and private religious participation ( $\alpha = .68$ ). The relatively low internal consistency for AUDIT scores and private participation may have been affected by low variance due to difficult, or low base rate, items included in the measures. For example, on the AUDIT, 95.8% of respondents denied ever needing a drink to get going the morning after heavy drinking. Further, low internal consistency may have also been partly due to the measures' relatively short test length, especially in the case of private participation which consisted of only four items.

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<sup>1</sup> That is, F-values varied by .47 – 3.16, and variance explained differed only 0.3-0.5%. No predictors changed status relative to p-value significance, and standardized coefficients varied by only 0.0 – 0.01.

Finally, to account for the relatively large number of models tested and control for familywise error, a conservative approach to the interpretation of results was employed by using a Bonferroni adjusted statistical significance cutoff of  $p = .0033$ .

#### Zero-Order Correlations

Pearson correlation coefficients were calculated to assess the relationships between variables at the zero-order level (Table 2). Given the large sample size, weak correlations (i.e., as small as  $r = .11$ ) met the statistical significance criterion of  $p = .0033$ . Thus, a cutoff of  $r \geq |.2|$  was used to determine potential practically significant effects (Ferguson, 2009).

All R/S scales correlated significantly and positively with each other at the zero-order level with few exceptions. As expected, negative religious coping was not related with positive religious coping, RSS, intrinsic religious motivation, DSES, public participation, or private participation, and only correlated significantly with extrinsic religious motivation. Public participation and extrinsic religious motivation were also unrelated, indicating that though individuals with high extrinsic religious motivation may be socially motivated, they do not necessarily engage in public religious activities. Notably, though most R/S scales correlated significantly, signifying practically meaningful relationships, scales did not correlate so highly as to indicate they assess a single general construct of religiousness or spirituality.

DDQ, RAPI, and AUDIT all correlated positively with each other. RAPI and AUDIT exhibited the strongest relationship ( $r = .64, p < .001$ ). Participant age, gender, and ethnicity were not correlated significantly with any R/S or alcohol-related variables with one exception: White ethnicity was negatively correlated with extrinsic religious

Table 2

*Zero-Order Correlations among Study Variables*

| Variable      | 1             | 2      | 3             | 4             | 5      | 6             | 7            | 8     |
|---------------|---------------|--------|---------------|---------------|--------|---------------|--------------|-------|
| 1. University | 1             |        |               |               |        |               |              |       |
| 2. Female     | .05           | 1      |               |               |        |               |              |       |
| 3. White      | <b>-.29**</b> | -.01   | 1             |               |        |               |              |       |
| 4. Protestant | <b>-.30**</b> | -.01   | -.14**        | 1             |        |               |              |       |
| 5. Catholic   | <b>.20**</b>  | .05    | .09*          | <b>-.67**</b> | 1      |               |              |       |
| 6. No R/S     | .16**         | -.03   | .08*          | <b>-.55**</b> | -.10** | 1             |              |       |
| 7. ImpSS      | .05           | -.09*  | -.01          | -.06          | -.05   | .11**         | 1            |       |
| 8. Greek      | -.07          | .05    | <b>.32**</b>  | -.06          | .17**  | -.08*         | .03          | 1     |
| 9. RPub       | <b>-.50**</b> | .04    | .11**         | <b>.42**</b>  | -.09*  | <b>-.46**</b> | -.14**       | .09*  |
| 10. RPriv     | .09*          | .08*   | -.16**        | <b>.31**</b>  | -.07   | <b>-.35**</b> | -.13**       | -.01  |
| 11. iMot      | <b>-.38**</b> | .10*   | .05           | <b>.43**</b>  | -.10** | <b>-.48**</b> | -.17**       | .11** |
| 12. eMot      | .14**         | .09*   | <b>-.22**</b> | <b>.21**</b>  | .08*   | <b>-.41**</b> | -.05         | .05   |
| 13. RCopePos  | -.19**        | .09*   | -.13**        | <b>.42**</b>  | -.02   | <b>-.56**</b> | -.15**       | .06   |
| 14. RCopeNeg  | -.01          | .04    | -.13**        | .15**         | -.10** | -.11**        | .10*         | -.02  |
| 15. DSE       | -.14**        | .11**  | -.12**        | <b>.38**</b>  | .01    | <b>-.52**</b> | -.10**       | .08*  |
| 16. RSS       | <b>-.21**</b> | -.01   | -.03          | <b>.40**</b>  | .02    | <b>-.57**</b> | -.15**       | .08*  |
| 17. SPS       | <b>-.24**</b> | .04    | <b>.25**</b>  | .05           | .05    | -.08*         | -.09*        | .16** |
| 18. CopeMal   | .11**         | .02    | -.11**        | -.06          | -.03   | .08*          | <b>.21**</b> | -.06  |
| 19. CopeAdap  | -.07          | .02    | .05           | .05           | -.02   | -.02          | -.02         | .01   |
| 20. RAPI      | <b>.20**</b>  | .03    | -.04          | -.13**        | .12**  | .02           | <b>.24**</b> | .06   |
| 21. DDQ       | <b>.28**</b>  | -.13** | .05           | <b>-.21**</b> | .15**  | .11**         | <b>.24**</b> | .15** |
| 22. AUDIT     | <b>.41**</b>  | -.05   | -.03          | -.19**        | .17**  | .05           | <b>.27**</b> | .10** |

Table 2 (continued).

| Variable         | 9             | 10           | 11            | 12           | 13            | 14            | 15           | 16            |
|------------------|---------------|--------------|---------------|--------------|---------------|---------------|--------------|---------------|
| 1. University    |               |              |               |              |               |               |              |               |
| 2. Female        |               |              |               |              |               |               |              |               |
| 3. White         |               |              |               |              |               |               |              |               |
| 4. Protestant    |               |              |               |              |               |               |              |               |
| 5. Catholic      |               |              |               |              |               |               |              |               |
| 6. Non-Religious |               |              |               |              |               |               |              |               |
| 7. ImpSS         |               |              |               |              |               |               |              |               |
| 8. Greek         |               |              |               |              |               |               |              |               |
| 9. RPub          | 1             |              |               |              |               |               |              |               |
| 10. RPriv        | <b>.42**</b>  | 1            |               |              |               |               |              |               |
| 11. iMot         | <b>.69**</b>  | <b>.46**</b> | 1             |              |               |               |              |               |
| 12. eMot         | <b>.16**</b>  | <b>.26**</b> | <b>.21**</b>  | 1            |               |               |              |               |
| 13. RCopePos     | <b>.57**</b>  | <b>.47**</b> | <b>.76**</b>  | <b>.38**</b> | 1             |               |              |               |
| 14. RCopeNeg     | .00           | .04          | -.08*         | <b>.20**</b> | .09*          | 1             |              |               |
| 15. DSE          | <b>.53**</b>  | <b>.50**</b> | <b>.74**</b>  | <b>.36**</b> | <b>.79**</b>  | -.04          | 1            |               |
| 16. RSS          | <b>.60**</b>  | <b>.44**</b> | <b>.73**</b>  | <b>.34**</b> | <b>.73**</b>  | -.13**        | <b>.76**</b> | 1             |
| 17. SPS          | <b>.20**</b>  | .04          | <b>.31**</b>  | -.10**       | <b>.24**</b>  | <b>-.27**</b> | <b>.32**</b> | <b>.40**</b>  |
| 18. CopeMal      | -.16**        | -.11**       | <b>-.23**</b> | .09*         | -.10**        | <b>.40**</b>  | -.15**       | <b>-.20**</b> |
| 19. CopeAdap     | .13**         | .06          | <b>.25**</b>  | .05          | <b>.26**</b>  | -.13**        | <b>.31**</b> | <b>.27**</b>  |
| 20. RAPI         | <b>-.23**</b> | -.05         | -.16**        | .05          | -.10*         | .09*          | -.09*        | -.13**        |
| 21. Consumption  | <b>-.29**</b> | -.12**       | <b>-.28**</b> | -.03         | <b>-.20**</b> | .04           | -.17**       | -.19**        |
| 22. AUDIT        | <b>-.31**</b> | -.04         | <b>-.26**</b> | .07          | -.16**        | .06           | -.16**       | <b>-.21**</b> |

Table 2 (continued).

| Variable         | 17            | 18           | 19   | 20           | 21           | 22 |
|------------------|---------------|--------------|------|--------------|--------------|----|
| 1. University    |               |              |      |              |              |    |
| 2. Female        |               |              |      |              |              |    |
| 3. White         |               |              |      |              |              |    |
| 4. Protestant    |               |              |      |              |              |    |
| 5. Catholic      |               |              |      |              |              |    |
| 6. Non-Religious |               |              |      |              |              |    |
| 7. ImpSS         |               |              |      |              |              |    |
| 8. Greek         |               |              |      |              |              |    |
| 9. RPub          |               |              |      |              |              |    |
| 10. RPriv        |               |              |      |              |              |    |
| 11. iMot         |               |              |      |              |              |    |
| 12. eMot         |               |              |      |              |              |    |
| 13. RCopePos     |               |              |      |              |              |    |
| 14. RCopeNeg     |               |              |      |              |              |    |
| 15. DSE          |               |              |      |              |              |    |
| 16. RSS          |               |              |      |              |              |    |
| 17. SPS          | 1             |              |      |              |              |    |
| 18. CopeMal      | <b>-.23**</b> | 1            |      |              |              |    |
| 19. CopeAdap     | <b>.49**</b>  | .08*         | 1    |              |              |    |
| 20. RAPI         | -.15**        | <b>.23**</b> | .03  | 1            |              |    |
| 21. Consumption  | -.06          | .15**        | -.04 | <b>.33**</b> | 1            |    |
| 22. AUDIT        | -.19**        | .18**        | -.05 | <b>.64**</b> | <b>.55**</b> | 1  |

*Note.* RPub = Public Religious Participation; RPriv = Private Religious Participation; iMot = Intrinsic Religious Motivation; eMot = Extrinsic Religious Motivation; RCopePos = Positive Religious Coping; RCopeNeg = Negative Religious Coping; DSE = Daily Spiritual Experiences; RSS = Religious Support Scale; ImpSS = Impulsive Sensation Seeking; SPS = Social Provisions Scale; Cope Mal = Maladaptive General Coping; CopeAdap = Adaptive General Coping; RAPI = Rutgers Alcohol Problem Index; Consumption = Daily Drinking Questionnaire Consumption Quantity per Week; AUDIT = Alcohol Use Disorders Identification Test

\*  $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; Correlations bolded if  $r \geq |.2|$  and  $p < .05$ .

motivation. ImpSS was positively correlated with quantity of alcohol consumption, RAPI, and AUDIT.

Attendance at the private Christian-affiliated institution was positively correlated with White ethnicity, Protestant religious affiliation, public religious participation, intrinsic religious motivation, and religious social support. Attendance at the Christian-affiliated institution also negatively correlated with DDQ, RAPI, and AUDIT. Greek affiliation was positively correlated with White ethnicity but unrelated with all R/S and alcohol-related variables at the zero-order level.

Protestant affiliation related positively with all R/S variables, except negative religious coping, and negatively with quantity of alcohol use per week. 'No religion' correlated negatively with all R/S variables, except negative religious coping. Catholic affiliation correlated nonsignificantly with all R/S variables, possible due to the relatively small group size. Public religious participation and intrinsic religious motivation were significantly negatively correlated with DDQ, RAPI, and AUDIT while RSS was significantly negatively related only with AUDIT. No other R/S scales were significantly associated with alcohol-related variables at the zero-order level.

### Primary Analyses

#### *Results, Weekly Alcohol Consumption*

*Main effects.* Hierarchical regression analysis was utilized to examine the predictive relationships of demographics, Greek membership, and R/S variables with weekly alcohol consumption (Table 3). Gender, ethnicity, and religious denominations with sufficient group size were dummy coded and entered in Step 1 of the regression model, along with ImpSS. Step 1 explained 10.0% of the variance in consumption

quantity,  $F(6, 658) = 13.28, p < .001$ .<sup>2</sup> However, only gender and ImpSS contributed significantly to the model. That is, females reported consuming approximately two fewer drinks per week than males ( $\beta = -.12, p = .001$ ) while ImpSS was positively related with consumption ( $\beta = .21, p < .001$ ).

Table 3

*Summary of regression analysis predicting quantity of alcohol consumption*

| Variable                | Step 1 |        |         | Step 2 |        |         | Step 3 |       |         |
|-------------------------|--------|--------|---------|--------|--------|---------|--------|-------|---------|
|                         | B      | SE B   | $\beta$ | B      | SE B   | $\beta$ | B      | SE B  | $\beta$ |
| Female                  | -2.1   | .64    | -.12*   | -2.24  | .63    | -.13*   | -2.07  | .63   | -.12*   |
| White                   | .27    | .58    | .02     | -.38   | .61    | -.02    | .82    | .63   | .05     |
| Protestant              | -3.0   | 1.67   | -.17    | -3.37  | 1.66   | -.19    | -1.18  | 1.65  | -.07    |
| Catholic                | 1.2    | 1.83   | .05     | .35    | 1.83   | .02     | 1.15   | 1.79  | .05     |
| Non-Relig               | -.28   | 1.90   | -.01    | -.30   | 1.88   | -.01    | -1.59  | 1.90  | -.06    |
| ImpSS                   | .35    | .06    | .21*    | .34    | .06    | .20*    | .28    | 0.06  | .17*    |
| Greek                   |        |        |         | 2.26   | .67    | .13*    | 2.42   | .65   | .14*    |
| RSS                     |        |        |         |        |        |         | -.01   | .03   | -.02    |
| RCopePos                |        |        |         |        |        |         | .10    | .08   | .08     |
| RCopeNeg                |        |        |         |        |        |         | -.02   | .07   | -.01    |
| iMot                    |        |        |         |        |        |         | -.26   | .08   | -.24*   |
| eMot                    |        |        |         |        |        |         | .02    | .06   | .01     |
| DSE                     |        |        |         |        |        |         | .02    | .03   | .05     |
| RPub                    |        |        |         |        |        |         | -.32   | .09   | -.20*   |
| RPriv                   |        |        |         |        |        |         | .08    | .05   | .07     |
| Adjusted R <sup>2</sup> |        | .100   |         |        | .114   |         |        | .172  |         |
| $\Delta F$              |        | 13.28* |         |        | 11.34* |         |        | 6.78* |         |

Note.  $n = 665$

\* $p < .0033$

<sup>2</sup> All reported percentages of variance reflect  $R^2$  adjusted for number of predictors in the relevant model.

Greek membership was dummy coded and added in Step 2 to determine its incremental influence in the regression model. Greek membership explained an additional 2.0% of variance in alcohol consumption,  $\Delta F(1, 657) = 11.34, p = .001$ . Gender ( $\beta = -.12, p = .001$ ) and ImpSS ( $\beta = .17, p < .001$ ) remained significant predictors, and Greek membership predicted significantly greater alcohol consumption ( $\beta = .13, p < .001$ ).

RSS, RCopePos, RCopeNeg, iMot, eMot, public and private religious participation, and DSE were entered in Step 3 and explained an additional 6.8% of variance,  $\Delta F(8, 649) = 6.78, p < .001$ . The full model explained 17.2% of the variance in motivation ( $\beta = -.24, p = .001$ ) and public religious participation ( $\beta = -.20, p < .001$ ) contributed significantly to the model, predicting lower alcohol consumption. ImpSS, gender, and Greek membership also maintained significant main effects.

An additional regression model was run including SPS as an independent variable to determine the extent to which general social support may account for variance in alcohol consumption above that of the R/S variables, including religious support (RSS). However, SPS did not explain additional variance,  $\Delta F(1, 647) < .01, p = .81$ , and similar main effects were again found for female gender ( $\beta = -.12, p = .001$ ), ImpSS ( $\beta = .17, p < .001$ ), public participation ( $\beta = -.20, p < .001$ ), Greek membership ( $\beta = .14, p < .001$ ), and iMot ( $\beta = -.24, p = .001$ ). Thus, the results indicate that neither religious support nor general social support exhibited a significant main effect on alcohol consumption while accounting for other demographic and R/S variables.

To determine the extent to which general coping may account for variance in alcohol consumption above that of the R/S variables, including religious coping, a

regression model was also run including empirically derived adaptive and maladaptive subscales (Khazem et al., 2014) of the Brief Cope as independent variables. However, the scales explained only 0.6% additional variance,  $\Delta F(1, 639) = 2.53, p = .08$ , and similar main effects were again found for female gender ( $\beta = -.12, p = .001$ ), ImpSS ( $\beta = .16, p < .001$ ), public participation ( $\beta = -.19, p < .001$ ), Greek membership ( $\beta = .15, p < .001$ ), and iMot ( $\beta = -.23, p = .001$ ). Thus, the results indicate that neither religious coping nor general coping exhibited a significant main effect on alcohol consumption while accounting for other demographic and R/S variables.

Finally, a regression model was run including institution as an independent variable to determine the extent to which institution characteristics may account for variance in alcohol consumption above that of the R/S variables. Institution attendance explained 2.4% additional variance,  $\Delta F(1, 648) = 19.98, p < .001$ , and the full model explained 19.6% of the variance in alcohol consumption,  $F(16, 648) = 11.09, p < .001$ . Attendance at the Christian-affiliated institution predicted significantly less alcohol consumption ( $\beta = -.21, p < .001$ ), and significant main effects were again found for female gender ( $\beta = -.13, p < .001$ ), ImpSS ( $\beta = .17, p < .001$ ), and Greek membership ( $\beta = .14, p < .001$ ). However, after inclusion of institution in the model, the effects of public participation ( $\beta = -.10, p = .07$ ) and iMot ( $\beta = -.19, p = .01$ ) diminished below the adjusted statistical significance cutoff ( $p < .004$ ). Further, examination of correlations revealed that though iMot was significantly correlated with alcohol consumption at the zero-order level ( $r = -.29$ ), the partial correlation was marginal ( $pr = -.09$ ). The result was similar for public attendance ( $r = -.29, pr = -.06$ ). That is, the unique contributions of

public participation and iMot in models predicting consumption were considerably smaller when accounting for institution in the model.<sup>3</sup>

*Interaction effects.* Interaction terms for Greek membership and each R/S variable were entered in Step 4 and assessed in separate models. First, the GreekXiMot interaction term was entered and explained an additional 2.3% of the variance above that of the main effects,  $\Delta F(1, 648) = 19.33, p < .001$ . The resulting final regression model explained 19.5% of alcohol consumption variance,  $F(16, 648) = 11.04, p < .001$ . Significant main effects were found for female gender ( $\beta = -.12, p = .001$ ), ImpSS ( $\beta = .16, p < .001$ ), public participation ( $\beta = -.22, p < .001$ ), Greek membership ( $\beta = .65, p < .001$ ), and iMot ( $\beta = -.16, p = .03$ ). The GreekXiMot effect was also significant ( $\beta = -.18, p < .001$ ) and was graphed using the techniques recommended by Aiken and West (1991) to depict the differential effect of iMot on alcohol consumption for Greeks and non-Greeks (Figure 1). Though simple slope analysis yielded statistically significant negative slopes for both Greeks ( $m = -.59, p < .001$ ) and non-Greeks ( $m = -0.17, p = .03$ ), a significantly steeper slope between iMot and alcohol consumption was exhibited for Greeks than for non-Greeks. This finding indicated that iMot moderated the relationship between Greek membership and alcohol consumption such that, at low iMot, Greeks consumed twice as many alcoholic drinks per week (12.69) than non-Greeks (6.98), but alcohol consumption was virtually equal at high iMot (4.72 and 4.71, respectively).

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<sup>3</sup> Regression models assessing moderation effects were run with institution included and excluded to assess influence on the regression equations. Moderation effects did not differ significantly. Though total variance explained varied by approximately 2.4%, no interaction terms changed status relative to p-value significance, and standardized coefficients varied only 0.0 – 0.01.

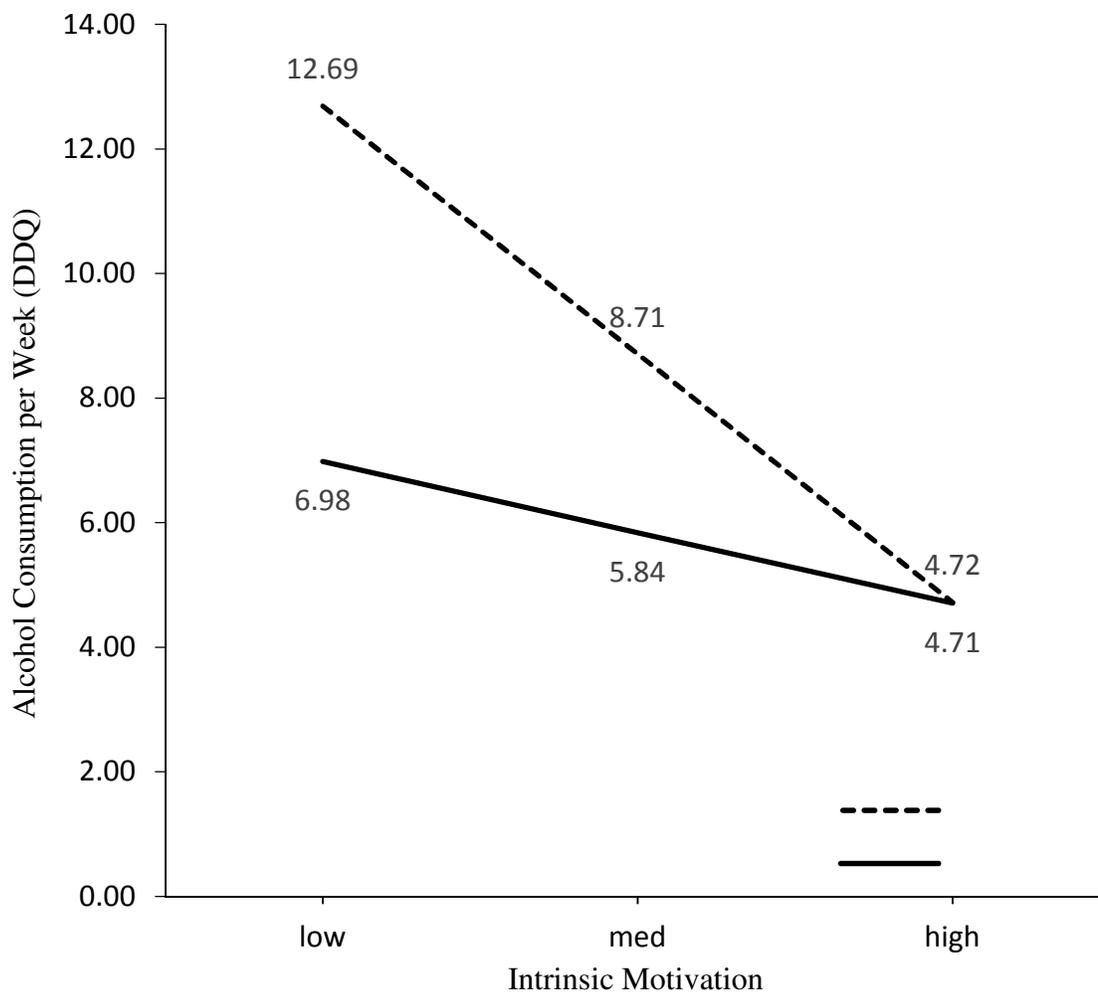


Figure 1. Interaction of Greek Membership and iMot in Predicting Consumption

The GreekXRCopePos interaction term explained 1.3% of the variance above that of the main effects,  $\Delta F(1, 648) = 10.25, p = .001$ , and the resulting final regression model explained 18.4% of alcohol consumption variance,  $F(16, 648) = 10.34, p < .001$ .

Significant main effects were again found for female gender ( $\beta = -.12, p = .001$ ), ImpSS ( $\beta = .17, p < .001$ ), public participation ( $\beta = -.21, p < .001$ ), Greek membership ( $\beta = .15, p < .001$ ), and iMot ( $\beta = -.24, p < .001$ ). The GreekXRCopePos effect was also significant ( $\beta = -.13, p = .001$ ) and was graphed to depict the differential effect of RCOPEPos on alcohol consumption for Greeks and non-Greeks (Figure 2). Simple slope analysis yielded a marginal positive slope for non-Greeks ( $m = 0.17, p = .007$ ) and

nonsignificant slope for Greeks ( $m = -.16, p = .19$ ), indicating that RCopePos exhibited opposite but relatively small effects on alcohol consumption between groups.

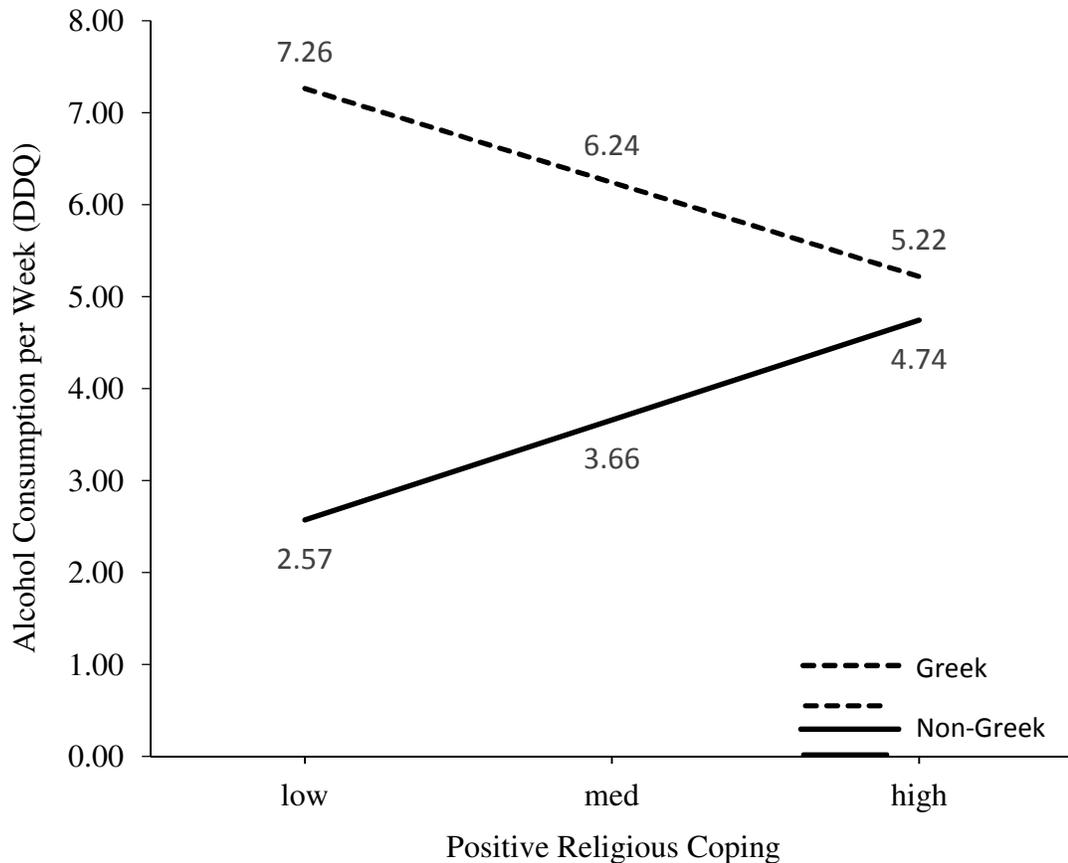
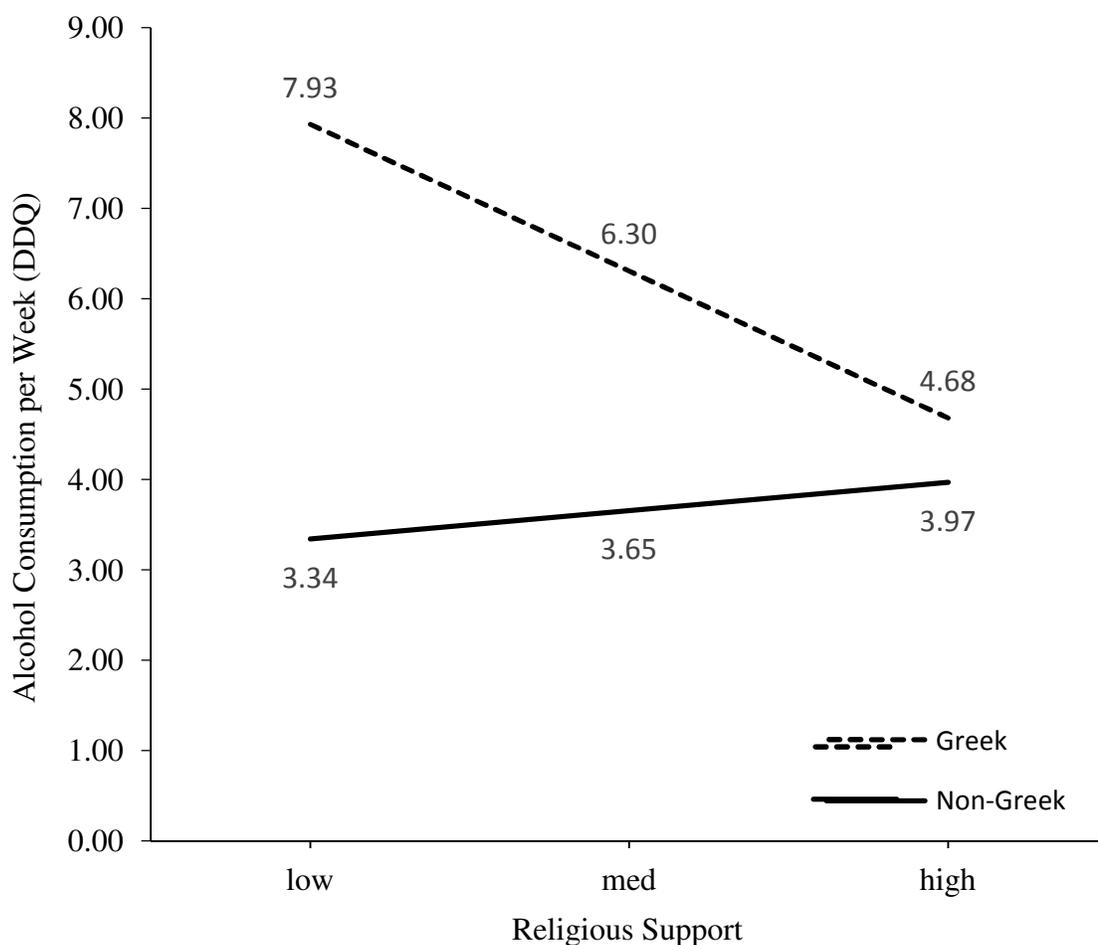


Figure 2. Interaction of Greek Membership and RCopePos in Predicting Consumption

The GreekXRSS interaction term was then entered and explained 1.1% of the variance above that of the main effects,  $\Delta F(1, 648) = 8.73, p = .003$ . The resulting final regression model explained 18.2% of alcohol consumption variance,  $F(16, 648) = 10.22, p < .001$ . Significant main effects were again found for female gender ( $\beta = -.12, p = .001$ ), ImpSS ( $\beta = .17, p < .001$ ), public participation ( $\beta = -.21, p < .001$ ), Greek membership ( $\beta = .15, p < .001$ ), and iMot ( $\beta = -.23, p = .001$ ). The GreekXRSS effect was also significant ( $\beta = -.12, p = .003$ ) and was graphed to depict the differential effect of RSS on alcohol consumption for Greeks and non-Greeks (Figure 3); however, simple

slope analysis yielded nonsignificant slopes for Greeks ( $m = -.08, p = .06$ ) and non-Greeks ( $m = 0.02, p = .61$ ).



*Figure 3.* Interaction of Greek Membership and RSS in Predicting Consumption

Interaction terms for Greek membership with eMot, RCopeNeg, DSE, RPub, and RPriv were also assessed in separate models. However, no interactions terms added significant predictive value, explaining only 0.1-1.0% addition variance in alcohol consumption (Table 4), and significant main effects for female gender ( $\beta = -.12, p = .001$ ), ImpSS ( $\beta = .17-.18, p < .001$ ), public participation ( $\beta = -.17(-).20, p = <.001-.002$ ), Greek membership ( $\beta = .14-.15, p < .001$ ), and iMot ( $\beta = -.24, p = .001$ ) were maintained in each of the models.

Table 4

*Summary of interaction effects for R/S variables and Greek membership*

| Moderator | DDQ-Weekly |              | RAPI    |              | AUDIT   |              |
|-----------|------------|--------------|---------|--------------|---------|--------------|
|           | $\beta$    | $\Delta R^2$ | $\beta$ | $\Delta R^2$ | $\beta$ | $\Delta R^2$ |
| RSS       | -.12*      | .011         | -.08    | .005         | -.04    | .001         |
| RCopePos  | -.13*      | .013         | -.06    | .003         | -.06    | .003         |
| RCopeNeg  | -.03       | .001         | .03     | .001         | -.07    | .004         |
| iMot      | -.18**     | .023         | -.08    | .005         | -.10    | .007         |
| eMot      | -.09       | .006         | .00     | <.001        | -.02    | <.001        |
| DSE       | -.11*      | .010         | -.04    | .001         | -.01    | <.001        |
| RPub      | -.07       | .004         | -.01    | <.001        | .01     | <.001        |
| RPriv     | -.03       | .001         | -.01    | <.001        | .03     | .001         |

*Note:  $R^2$  values adjusted for number of predictors in the model*

\* $p < .01$ . \*\* $p < .001$

*Summary.* In summary, analysis of regression results revealed that Greek membership, impulsive sensation-seeking traits, and male gender were positively associated with alcohol consumption while public religious participation and intrinsic religious motivation were negatively associated. Attendance at the private religious university also predicted significantly lower alcohol consumption, and the main effects of RPub and iMot diminished when institution was included in the model, indicating that variance in alcohol consumption related to these R/S variables may be partially accounted for by university characteristics. Analysis of Greek and R/S moderation effects revealed significant interactions for iMot, RCopePos, and RSS with Greek membership. However, simple slopes analysis demonstrated nonsignificant relationships between each R/S variable and alcohol consumption for both groups, which was commensurate with the nonsignificant main effects, with one exception: iMot moderated the relationship between Greek membership and alcohol consumption such that, at low iMot, Greeks consumed

approximately twice as many alcoholic drinks per week than non-Greeks, but alcohol consumption was essentially equal at high iMot.

### *Results, Alcohol-Related Problems*

*Main Effects.* Hierarchical regression analysis was utilized to examine the predictive relationships of demographics, Greek membership, and R/S variables with alcohol-related problems. Gender, ethnicity, and religious denominations with sufficient group size were dummy coded and entered in Step 1 of the regression model, along with ImpSS. Step 1 explained 8.3% of the variance in alcohol-related problems,  $F(6, 669) = 10.10, p < .001$ ; however, only ImpSS contributed significantly to the model, such that greater ImpSS predicted significantly more alcohol-reported problems ( $\beta = .25, p < .001$ ).

Greek membership was dummy coded and added in Step 2 to determine its incremental influence in the regression model. The model change was nonsignificant,  $\Delta R^2 = 0.3\%, \Delta F(1, 668) = 2.31, p = .13$ . ImpSS remained the only significant predictor.

RSS, RCopePos, RCopeNeg, iMot, eMot, public and private religious participation, and DSE were entered in Step 3 and explained an additional 4.9% of the variance in alcohol-related problems,  $\Delta F(8, 660) = 4.67, p < .001$ . The full model explained 11.5% of the variance,  $F(15, 660) = 6.88, p < .001$ ; however, only public participation ( $\beta = -.22, p < .001$ ) and ImpSS ( $\beta = .14, p < .001$ ) demonstrated significant main effects (Table 5).

An additional regression model was run including SPS as an independent variable to determine the extent to which general social support may account for variance in alcohol-related problems above that of the R/S variables, including religious support. However, SPS explained only 0.6% additional variance,  $\Delta F(1, 657) = 4.40, p = .04$ , and

Table 5

*Summary of regression analysis predicting alcohol-related problems*

| Variable   | Step 1 |        |         | Step 2 |      |         | Step 3 |       |         |
|------------|--------|--------|---------|--------|------|---------|--------|-------|---------|
|            | B      | SE B   | $\beta$ | B      | SE B | $\beta$ | B      | SE B  | $\beta$ |
| Female     | 1.13   | .68    | .06     | 1.07   | .68  | .06     | .95    | .68   | .05     |
| White      | -.59   | .62    | -.04    | -.90   | .65  | -.06    | .16    | .69   | .01     |
| Protestant | -1.71  | 1.80   | -.09    | -1.88  | 1.80 | -.10    | -.02   | 1.81  | <.01    |
| Catholic   | 1.59   | 1.97   | .06     | 1.20   | 1.98 | .05     | 2.24   | 1.96  | .09     |
| Non-Relig  | -1.34  | 2.05   | -.05    | -1.35  | 2.04 | -.05    | -2.19  | 2.09  | -.08    |
| ImpSS      | .45    | .07    | .25*    | .44    | .07  | .25*    | .40    | .07   | .23*    |
| Greek      |        |        |         | 1.10   | .72  | .06     | 1.17   | .71   | .07     |
| RSS        |        |        |         |        |      |         | -.02   | .03   | -.06    |
| RCopePos   |        |        |         |        |      |         | .04    | .09   | .03     |
| RCopeNeg   |        |        |         |        |      |         | .09    | .07   | .05     |
| iMot       |        |        |         |        |      |         | -.02   | .08   | -.02    |
| eMot       |        |        |         |        |      |         | .09    | .07   | .06     |
| DSE        |        |        |         |        |      |         | -.01   | .03   | -.01    |
| RPub       |        |        |         |        |      |         | -.39   | .09   | -.22*   |
| RPriv      |        |        |         |        |      |         | .07    | .06   | .06     |
| Adjusted   |        | .075   |         |        | .077 |         |        | .115  |         |
| $\Delta F$ |        | 10.10* |         |        | 2.31 |         |        | 4.67* |         |

Note.  $n = 676$

\* $p < .0033$

similar main effects were again found only for ImpSS ( $\beta = .22, p < .001$ ) and public participation ( $\beta = -.23, p < .001$ ). Thus, the results indicate that neither religious support nor general social support exhibited a significant main effect on alcohol-related problems while accounting for other demographic and R/S variables.

To determine the extent to which general coping may account for variance in alcohol-related problems above that of the R/S variables, including RCopePos and RCopeNeg, a regression model was also run including adaptive and maladaptive subscales of the Brief Cope as independent variables. General coping explained 2.4% additional variance above that of the main effects,  $\Delta F(1, 650) = 9.18, p < .001$ , and the full model explained 13.6% of the variance in alcohol-related problems,  $F(16, 650) = 7.15, p < .001$ ). However, only maladaptive coping added significantly to the model ( $\beta = .16, p < .001$ ), and similar main effects were again found for ImpSS ( $\beta = .20, p < .001$ ) and public participation ( $\beta = -.22, p < .001$ ). Thus, the results indicate that greater maladaptive general coping predicted significantly more alcohol-related problems while adaptive general coping and religious coping were unrelated.

Finally, a regression model was run including institution as an independent variable to determine the extent to which institution characteristics may account for variance in alcohol-related problems above that of the R/S and demographic variables. Institution attendance explained only 0.4% additional variance,  $\Delta F(1, 659) = 2.76, p = .10$ , and similar main effects were again found for ImpSS ( $\beta = .23, p < .001$ ) and public participation ( $\beta = -.19, p = .002$ ). Thus, the results indicate that institution group membership did not significantly improve the model predicting alcohol-related problems, nor did it account for variance explained by ImpSS or public participation.<sup>4</sup>

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<sup>4</sup> Regression models assessing moderation effects were run with institution included and excluded to assess influence on the regression equations. Moderation effects did not differ significantly. Though total variance explained varied by approximately 0.4%, no interaction terms changed status relative to p-value significance, and standardized coefficients varied only 0.0 – 0.01.

*Interaction Effects.* Interaction terms for Greek membership and each R/S variable were entered at Step 4 and assessed in separate models. However, no interaction terms added significant predictive value, explaining only 0.0-0.5% additional variance in alcohol-related problems (Table 4), and significant main effects for ImpSS ( $\beta = .22-.23$ ,  $p < .001$ ) and public participation ( $\beta = -.22-(-).23$ ,  $p = .001$ ) were maintained in each of the models.

*Summary.* In summary, the results revealed only three significant predictors of alcohol-related problems. Impulsive sensation-seeking traits and maladaptive general coping were positively associated with alcohol-related problems while public religious participation was negatively associated. Analysis of interaction terms indicated that R/S variables did not moderate the relationship between Greek membership and alcohol-related problems.

#### *Results, Hazardous Drinker Patterns*

*Main Effects.* Hierarchical regression analysis was utilized to examine the predictive relationships of demographics, Greek membership, and R/S variables with harmful drinking patterns (Table 6). Gender, ethnicity, and religious denominations with sufficient group size were dummy coded and entered in Step 1 of the regression model, along with ImpSS. Step 1 explained 10.1% of the variance in harmful drinking,  $F(6, 672) = 13.68$ ,  $p < .001$ ; however, only ImpSS contributed significantly to the model, such that greater ImpSS predicted significantly higher AUDIT scores ( $\beta = .26$ ,  $p = .001$ ).

RSS, RCopePos, RCopeNeg, iMot, eMot, public and private religious participation, and DSE were entered in Step 3 and added significantly to the regression model, explaining an additional 9.3% of variance in harmful drinking,  $\Delta F(8, 663)$

Table 6

*Summary of regression analysis predicting harmful drinking patterns*

| Variable                | Step 1 |        |         | Step 2 |      |         | Step 3 |       |         |
|-------------------------|--------|--------|---------|--------|------|---------|--------|-------|---------|
|                         | B      | SE B   | $\beta$ | B      | SE B | $\beta$ | B      | SE B  | $\beta$ |
| Female                  | -.26   | .35    | -.03    | -.31   | .35  | -.03    | -.40   | .34   | -.04    |
| White                   | -.42   | .32    | -.05    | -.68   | .34  | -.08    | .09    | .35   | .01     |
| Protestant              | -1.47  | .93    | -.15    | -1.61  | .93  | -.16    | -.10   | .91   | -.01    |
| Catholic                | 1.06   | 1.02   | .08     | .74    | 1.02 | .06     | 1.55   | .99   | .12     |
| Non-Relig               | -.72   | 1.06   | -.05    | -.73   | 1.06 | -.05    | -1.43  | 1.05  | -.09    |
| ImpSS                   | .24    | .03    | .26*    | .24    | .03  | .26*    | -.03   | .03   | .23*    |
| Greek                   |        |        |         | .90    | .37  | .09     | .03    | .36   | .10     |
| RSS                     |        |        |         |        |      |         | -.02   | .01   | -.13    |
| RCopePos                |        |        |         |        |      |         | -.05   | .04   | .05     |
| RCopeNeg                |        |        |         |        |      |         | .09    | .04   | -.02    |
| iMot                    |        |        |         |        |      |         | -.01   | .04   | -.08    |
| eMot                    |        |        |         |        |      |         | -.24   | .04   | .10     |
| DSE                     |        |        |         |        |      |         | .09    | .01   | -.03    |
| RPub                    |        |        |         |        |      |         | -.03   | .05   | -.26*   |
| RPriv                   |        |        |         |        |      |         | .03    | .03   | .15*    |
| Adjusted R <sup>2</sup> |        | .101   |         |        | .107 |         |        | .192  |         |
| $\Delta F$              |        | 13.68* |         |        | 5.85 |         |        | 9.80* |         |

Note.  $n = 679$

\* $p < .0033$

= 9.80,  $p < .001$ . The full model explained 19.2% of the variance in alcohol consumption,  $F(15, 663) = 11.75, p < .001$ . Private participation ( $\beta = .15, p = .001$ ) exhibited a significant positive relationship with harmful drinking while greater public participation predicted significantly lower scores ( $\beta = -.26, p = .001$ ). ImpSS ( $\beta = .23, p < .001$ ) also

maintained a significant effect, and Greek membership approached significance ( $\beta = .10$ ,  $p = .007$ ) after the R/S variables were entered.

An additional regression model was run including SPS as an independent variable to determine the extent to which general social support may account for variance in harmful drinking above that of the R/S variables, including religious support (RSS). However, SPS explained only 0.6% additional variance,  $\Delta F(1, 660) = 4.80$ ,  $p = .03$ , and similar main effects were again found for ImpSS ( $\beta = .23$ ,  $p < .001$ ), Greek membership ( $\beta = .11$ ,  $p = .005$ ), public participation ( $\beta = -.27$ ,  $p < .001$ ), and private participation ( $\beta = .14$ ,  $p = .002$ ). Thus, the results indicate that neither religious support nor general social support exhibited a significant main effect on harmful drinking.

To determine the extent to which general coping may account for variance in harmful drinking above that of the demographic and R/S variables, including religious coping, a regression model was also run including adaptive and maladaptive subscales of the Brief Coping as independent variables. General coping explained 1.4% additional variance,  $\Delta F(1, 653) = 5.73$ ,  $p = .003$ , and the full model explained 20.5% of the variance in harmful drinking,  $F(16, 653) = 11.20$ ,  $p < .001$ . However, only maladaptive coping added significantly to the model ( $\beta = .13$ ,  $p = .001$ ), and similar main effects were again found for ImpSS ( $\beta = .21$ ,  $p < .001$ ), Greek membership ( $\beta = .11$ ,  $p = .003$ ), public participation ( $\beta = -.27$ ,  $p < .001$ ), and private participation ( $\beta = .16$ ,  $p < .001$ ). Thus, the results indicate that greater maladaptive general coping predicted significantly more alcohol-related problems while adaptive general coping and religious coping were unrelated.

Finally, a regression model was run including institution as an independent variable to determine the extent to which institution characteristics may account for variance in harmful drinking above that of the demographic and R/S variables. Institution attendance explained 5.7% additional variance,  $\Delta F(1, 662) = 51.65, p < .001$ , and the full model explained 24.9% of the variance in harmful drinking,  $F(16, 662) = 11.09, p < .001$ ). Attendance at the Christian-affiliated institution predicted significantly lower AUDIT scores ( $\beta = -.32, p < .001$ ), and a significant main effect was again found for ImpSS ( $\beta = .23, p < .001$ ). However, after inclusion of institution in the model, the effects of public participation ( $\beta = -.11, p = .04$ ) and private participation ( $\beta = .04, p = .41$ ) diminished below statistical significance. Further, examination of correlations revealed that though public participation was significantly correlated with alcohol consumption at the zero-order level ( $r = -.30$ ), the partial correlation was marginal ( $pr = -.08$ ), indicating that the unique contribution of public participation was considerably smaller when institution was accounted for in the model.<sup>5</sup>

*Interaction Effects.* Interaction terms for Greek membership and each R/S variable were entered at Step 4 and assessed in separate models. However, no interaction terms added significant predictive value, explaining only 0.0-0.7% additional variance in harmful drinking (Table 4), and significant main effects for ImpSS ( $\beta = .23-.24, p < .001$ ), public participation ( $\beta = -.26(-).27, p = .001$ ), and private participation ( $\beta = .14-.15, p < .001$ ), were maintained in each of the models.

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<sup>5</sup> Regression models assessing moderation effects were run with institution included and excluded to assess influence on the regression equations. Moderation effects did not differ significantly. Though total variance explained increased by approximately 5.7%, no interaction terms changed status relative to p-value significance, and standardized coefficients varied only 0.0 – 0.01.

*Summary.* In summary, analysis of regression results revealed that Greek membership, impulsive sensation-seeking traits, and maladaptive general coping positively predicted harmful drinking while public religious participation was negatively associated. Interestingly, though private religious participation was unrelated to harmful drinking at the zero-order level, regression analyses yielded a significant positive relationship when accounting for other R/S and demographic variables. Attendance at the private religious university also predicted significantly lower alcohol consumption, and the main effects of RPub and RPriv diminished when institution was included in the model, indicating that variance in harmful drinking related to these R/S variables may be partially accounted for by university characteristics. Analysis of interaction terms indicated that R/S variables did not moderate the relationship between Greek membership and harmful drinking.

## CHAPTER IV

### SUMMARY

#### Discussion

Excessive alcohol use has been recognized as one of the most critical health hazards on college campuses in recent decades, particularly for members of fraternity and sorority organizations, and an emphasis on identifying risk and protective factors has resulted in an expansive, but somewhat disjointed, literature base. Alcohol use behaviors are multiply determined and research evinces several predisposing, self-propagating, and consequent factors at work. R/S has received substantial support as a protective factor for alcohol use across many populations, and the current study assessed its influence on alcohol use and alcohol-related problems in a college student sample. This study aimed to extend upon previous research by (1) assessing effects of R/S on both alcohol consumption and alcohol-related problems, (2) delineating the influences of six dimensions of R/S and their interaction effects with Greek membership, and (3) accounting for possible confounding effects of general coping and social support in a undergraduate sample from one private Christian-affiliated institution and one public university. Toward this aim, the study examined a series of regression models predicting alcohol consumption and consequences in this high risk population, the results of which represent multiple small, but significant effects, measured reliably in a large and appropriate sample.

Consistent with the first set of hypotheses, weekly alcohol consumption was greater for males than for females; however, though significant, the difference equated to only approximately two more drinks per week. Further, males and females did not differ

in their reporting of alcohol-related problems. These findings are consistent with previous literature suggesting a convergence of drinking habits between genders in recent decades (e.g., Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). This trend has been demonstrated particularly for non-binge drinkers, such that male binge drinkers continue to report drinking at higher rates than female binge drinkers, but male and female non-binge report similar consumption levels (e.g., Balodis, Potenza, & Olmstead, 2009).

It was also hypothesized that White participants would consume more alcohol and report more alcohol-related problems, but no significant differences were found between ethnic groups. Previous studies have generally reported greater alcohol consumption in White students, particularly in terms of binge drinking (Wechsler et al., 2002). The equivalence across ethnic groups in the current study may be due to sample characteristics that differ from those in most previous studies. That is, the majority (91.2%) of non-White participants hailed from the public university, at which significantly greater consumption and consequences were reported.

Similarly, the large majority of both Catholic (97%) and non-religious (96%) also attended the public university, which may have accounted for the modest differences between Protestant and non-Protestant groups. Nevertheless, the influence of religious denomination on alcohol consumption and consequences was rendered essentially null after R/S dimensions were accounted for in the regression models. This finding is consistent with previous literature suggesting that the protective influence of R/S is not attributable to specific religious rule systems or beliefs, and even if it were so, subgroups within a given religious or denomination often differ in their attitudes about alcohol use (Gorsuch, 1995). Rather, previous literature and the current study appear to demonstrate

that the inhibitory effect of R/S likely hinges on aspects that generalize across religious groups, and potentially across non-religious groups that maintain comparable substance abuse norms and/or practices.

Consistent with hypotheses four and five, ImpSS and Greek membership both predicted greater alcohol consumption and risky drinking patterns, and ImpSS was also positively associated with alcohol-related problems. However, Greek membership was not related to ImpSS or alcohol-related problems, which is somewhat inconsistent with some previous literature suggesting that individuals high in ImpSS are more likely to drink excessively and to join the Greek system, resulting in a compounded effect on risky drinking behaviors (Park et al., 2009). Additional analyses were also conducted to examine the possible interaction effect of Greek membership and alcohol consumption in predicting alcohol-related problems. However, while greater consumption quantity predicted more alcohol-related problems, the relationship was not moderated by Greek membership, further indicating that Greeks in the current sample did not differ from non-Greeks in terms of drinking-related consequences.

One of the most robust findings in substance use literature is the inverse relationship between religious or spiritual involvement and alcohol use, and a central aim of this study was to delineate the independent influences of six dimensions of R/S on alcohol use and consequences by multiple regression analysis. Thus, hypotheses six through eleven posited that each R/S dimension would be negatively associated with alcohol consumption quantity, alcohol-related problems, and harmful drinking patterns with the exception of negative religious coping, which was hypothesized to be positively related; however, most of the hypotheses were not supported. Only public religious

participation and intrinsic motivation were significant in models predicting consumption quantity, and only public participation was a significant (negative) predictor of alcohol-related problems. That is, religious preference (denomination), positive and negative religious coping, religious social support, daily spiritual experiences, and extrinsic religious motivation were unrelated with alcohol outcomes when all R/S dimensions, Greek membership, and control variables were entered simultaneously. This finding appears to be in conflict with some previous research, as each R/S dimension was selected based on previous supportive findings; however, most studies in the existing literature assessed only one or two R/S-type variables, failing to account for possible shared variance or non-mutual exclusivity amongst dimensions of R/S. For example, religious denomination has been supported as a predictor of alcohol abuse in previous studies, and Protestant affiliation was negatively related with alcohol consumption at the zero-order level in the present study. Nevertheless, the effect diminished when accounting for other R/S variables, indicating the relationship may be mediated by one or more dimensions of R/S.

The fact that public religious participation and intrinsic motivation accounted for variance in alcohol consumption beyond that of other dimensions speaks to a potential dual mechanism effect, which was discussed by Gorsuch (1995) and has received some empirical support in more recent literature (e.g., Krause, 2003). Religion's protective effect may be generally explained by its (1) influence on social norms and values and (2) provision of avenues to meet basic needs and develop psychological wellbeing.

Several processes have been posed as mechanisms for religion's influence on norms and values. One such process is social control, or the attempt by others in one's

immediate environment to regulate behavior and the environment. For example, social control may be applied by limiting adolescents' access to alcohol in the home or by limiting time spent unmonitored outside the home. Socialization processes may also promote the internalization of anti-alcohol use norms modeled by religious authority figures, parents, and religious peers. Consistency seems to play a crucial role in both social control and socialization. For example, adolescents are less likely to abuse substances if raised in homes in which both parents are present and share religious views (Amoateng & Bahr, 1986). As the current study sample consisted of college students, 92% of which reported no longer living with parents, the effect of public participation on alcohol use may reflect this effect in two ways. Students who continue to participate frequently in religious events when no longer under previous social constraints (e.g., parent rules) may reflect greater internalization of pro-religious attitudes, which may also continue to negatively influence their openness to alcohol abuse (Gorsuch, 1995). Greater internalization of pro-religious and anti-alcohol attitudes may also influence peer selection and, subsequently, peer norms and influence, which have been demonstrated as a strong predictive factor for alcohol abuse (Read et al., 2005).

The significant negative effect of intrinsic religious motivation on alcohol use evinces the second protective mechanism, in which religion may offer means to meet basic psychological needs. Religion provides means to deal with life's trials, beyond that of interpersonal support, and a basis for hope that may protect against psychological anguish and despair that might otherwise lead to substance abuse (Gorsuch, 1995). For example, importance placed on religious beliefs has been shown to outweigh both the presence and absence of life stressors in predicting alcohol abuse (Krause, 1991).

Religion has also been shown to exhibit a protective effect by providing purpose and a way of life, the lack of which has been linked with substance abuse. Intrinsic religious motivation may be construed as a measure of religious commitment and the extent to which one understands religion to fulfill these two purposes, to provide comfort and relief (e.g., having a strong sense of God's presence) and to provide purpose and inspiration (e.g., trying to live one's life according to religious beliefs). Thus, religious individuals who score high on intrinsic motivation may experience a stronger protective effect than those who are extrinsically motivated.

Hypotheses twelve through fifteen posited that each R/S dimension would buffer the relationship between Greek membership and alcohol outcomes with the exception of negative religious coping, which was hypothesized to exacerbate the relationships. However, only intrinsic religious motivation exhibited a moderating effect on the relationship between Greek membership and alcohol consumption, such that at low iMot, Greeks consumed twice as many alcoholic drinks per week than non-Greeks, but alcohol consumption was essentially equal and significantly lower at high iMot. This finding indicates that comfort, direction, and life purpose provided by religion may be particularly important for fraternities and sororities members. It may be inferred that, for highly committed and intrinsically motivated religious Greeks, religion serves to buffer against peer influence and pro-alcohol norms.

No other R/S variables moderated the influence of Greek membership in models predicting alcohol-related problems or harmful drinking, and though positive religious coping and religious support each interacted significantly with Greek membership in predicting alcohol consumption, the effects for each group were nonsignificant. These

null findings indicate that the majority of R/S dimensions did not buffer the influence of Greek membership on alcohol use, and none buffered its relationship with alcohol-related problems. Notably, this finding does not imply that the significant main effect for public participation is null for Greeks, but rather, the effect is generally equivalent to that for non-Greeks.

In terms of treatment implications, while the primary focus of the present study was to examine the protective influences of R/S dimensions, findings reflect relationships that may also be relevant to substance use treatment outcomes. Results supporting the inverse relationship of public participation and intrinsic motivation with alcohol use, as well as the null effect for any specific religious preferences, are commensurate with previous findings in outcome studies for alcohol abuse treatment programs involving spirituality such as Alcoholics Anonymous (AA). For example, AA involvement has been linked to an increased sense of existential meaning and purpose in life which, in turn, predicted significantly lower probability of binge drinking at six-month follow-up (Robinson et al., 2007). As was previously discussed, intrinsic religious motivation, as assessed by the I/E-R, may be conceptualized as a measure of belief in one's religion as a source of life purpose and direction. These findings suggest that such an orientation may be helpful not only as a protective factor, but also if developed through intervention.

Further, one of the most robust findings in AA treatment outcome literature is the relationship between AA involvement and increased R/S, which has been found to predict duration of sobriety (Zemore & Kaskutas, 2004) and even to partially mediate the long-term effects of AA practices on alcohol use at 18 months (Krentzman, Cranford, & Robinson, 2013) and up to 10 years (Tonigan, 2007).

Importantly, similar to the protective effect of public religious participation demonstrated in the present study, the effects of AA practices are not isolated to a particular group of religious or spiritual individuals. For example, Tonigan, Miller, and Schermer (2002) found that though atheist and agnostic clients are less likely to attend AA consistently, atheist/agnostic and religious/spiritual individuals who participate consistently tend to benefit equally in terms of percentage of days abstinent and level of drinking intensity. Again, these findings suggest that R/S involvement does not serve only as a protective factor and that effects are not attributable to a particular set of religious beliefs. Rather, the positive effects may also be relevant for non-religious individuals and can be derived from participation within group treatment settings. As Gorsuch (1995) stated, we must “assume that there may be nothing unique about the influence of a religious ideology or religious group,” and “a group not based on a belief in a god could have the same impact as a religious group if it held to the same substance abuse norms and practices” (p. 67).

Hypotheses sixteen and seventeen posited that adaptive general coping and social support would be negatively related with alcohol outcomes, and maladaptive general coping would be positively related, but would not account for the effects of positive and negative religious coping or religious support. However, contrary to the hypotheses and some previous literature (e.g., Daugherty & McLarty, 2003), no coping or social support variables exhibited significant effects on alcohol consumption, and only maladaptive general coping was significant in models predicting alcohol-related problems and harmful drinking.

Finally, it was hypothesized that attendance at the private Christian-affiliated university would predict lower levels of alcohol use and problems but would not account for the protective effect of R/S variables. Consistent with previous literature, attendance at the Christian-affiliated university predicted significantly lower alcohol use but was unrelated with alcohol-related problems. When included in regression models predicting alcohol use, institution also attenuated the effect of intrinsic motivation and public participation. Though the regression approach utilized does not allow for causal conclusions or interpretations about directionality, one can infer from this finding that some variance in alcohol consumption related to iMot and RPub may be captured by institutional characteristics. That is, much of the iMot and RPub variance may be accounted for by attending the Christian university.

Several factors related to institution characteristics might explain these findings. One possible explanation might be related to university alcohol use policies, which differ significantly. That is, the public university drug and alcohol policy prohibits the possession or consumption of alcohol *in plain view on campus* but does not explicitly prohibit use and ensures rights to privacy, except in cases of public nuisance. The Christian-affiliated university handbook prohibits the possession, purchase, and use of alcohol *on or off campus*, and goes on to detail several examples, including empty alcohol containers in one's vehicle, that may be construed as evidence of policy violation. However, some research suggests that regulations and punishment do not serve as effective protective factors and may even be counterproductive, leading to increased substance abuse (Kaplan & Johnson, 1992). It is more likely that two processes discussed earlier explain the relationship between institution and alcohol use. First, a selection

effect may explain part of the protective effect. Individuals from strong religious backgrounds are more likely than those from nonreligious or inconsistently religious backgrounds to internalize pro-religious and anti-alcohol attitudes which may then make them more likely to choose a religion-affiliated university and to abstain from problematic alcohol use. Individuals also continue to form attitudes influenced by peer and authority figure modeling throughout early adulthood; thus, students on the Christian-university campus may benefit from continual exposure to more consistent anti-alcohol attitudes and practices.

#### Limitations of the Current Study

The current study had several limitations. All data collected for this study were self-reported, which offers the opportunity for biased or otherwise inaccurate responding. Though attempts were made to assure participants of anonymity and confidentiality (Baker & Brandon, 1990), and some research suggests that self-report data in alcohol research obtains acceptably accurate data, particularly with large samples (e.g., see Osberg & Shrauger, 1986), responses could have been skewed by socially-desirable responding, avoidance of potential punishment for breaking university policies, or due to inaccurate recall of alcohol consumption.

Data were also collected at a single time point for each individual and, therefore, temporal precedence of effects cannot be determined and inferences about directional conclusions are limited. The study might be strengthened by additional analyses to assess directional and conditional processes and better elucidate the interrelationships of R/S dimensions and their effect on alcohol use.

Additionally, the results and conclusions drawn from this study may be somewhat limited in their generalizability. As the sample consisted entirely of college students, findings may not translate to other populations, including younger adolescents, older adults, and same-aged non-students. Also, though the study was strengthened by sampling students from a private Christian-affiliated university and a public state university, a few sample characteristics may limit generalizability of findings: (1) The majority of the sample was White (67.3%); (2) the vast majority (91.2%) of non-White participants hailed from the public university; and (3) a majority of participants reported preference for Protestant Christianity with only two other groups being adequately represented for analyses, Catholic and non-religious. Further, both universities are located in the southeastern United States, often colloquially referred to as the Bible Belt. Thus, the sample may be unrepresentative of students in other regions, and religion might be found to exhibit different, lesser, or greater effects on alcohol use and consequences in other populations with different cultural norms or belief systems.

#### Future Directions

The current study was consistent with previous theories suggesting that social control and internalization of pro-religion and anti-alcohol norms may account for part of religion's protective effect on alcohol use. Future research may benefit from investigating these findings in geographical regions outside of the southeastern United States and especially within ethnic minority groups and non-Western religious groups. Future studies should also aim to more directly investigate (1) student perceptions of previous and current religion-based social control, (2) previous and current modeling of norms by parents, other authority figures, and peers, and (3) attitudes pertaining to alcohol and

religion. Longitudinal data collection would be most beneficial. Additionally, the use of implicit attitude measures (e.g., Implicit Association Test) may prove useful in controlling for response impression management and better assessing views about religious and alcohol use. Studies should also assess for selection bias effects by inquiring how students at religion-affiliated universities chose to enroll. This may aid in answering the extent to which religion-affiliated schools exhibit a protective effect on alcohol use or whether students with anti-alcohol norms are simply more likely to attend religion-affiliated schools.

## APPENDIX A

## INSTITUTIONAL REVIEW BOARD NOTICE OF COMMITTEE ACTION

## The University of Southern Mississippi



THE UNIVERSITY OF  
SOUTHERN MISSISSIPPI

## INSTITUTIONAL REVIEW BOARD

118 College Drive #5116 | Hattiesburg, MS 39406-0001

Phone: 601.266.5997 | Fax: 601.266.4377 | [www.usm.edu/research/institutional-review-board](http://www.usm.edu/research/institutional-review-board)

## NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **13121602**

PROJECT TITLE: **College Students' Alcohol Use and Related Problems: What Makes Religiousness a Protective Factor?**

PROJECT TYPE: **New Project**

RESEARCHER(S): **Corey Brawner**

COLLEGE/DIVISION: **College of Education and Psychology**

DEPARTMENT: **Psychology**

FUNDING AGENCY/SPONSOR: **N/A**

IRB COMMITTEE ACTION: **Exempt Review Approval**

PERIOD OF APPROVAL: **12/17/2013 to 12/16/2014**

**Lawrence A. Hosman, Ph.D.**  
**Institutional Review Board**

## APPENDIX B

## INSTITUTIONAL REVIEW BOARD NOTICE OF COMMITTEE ACTION

Union University



UNION UNIVERSITY  
INSTITUTIONAL REVIEW BOARD

**To:** Corey Brawner  
**From:** Michele Atkins, Ph.D. - Chair, Institutional Review Board  
**Protocol:** #0114-00709 "College Students' Alcohol Use and Related Problems: What Makes Religiousness a Protective Factor?"

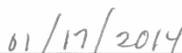
This is to notify you that the Institutional Review Board has approved the above referenced protocol. This project was reviewed in accordance with all applicable statutes and regulations as well as ethical principles.

Approval of this project is given with the following obligations:

1. When the project is finished or terminated, the attached Notice of Completion form must be completed and sent to Suzanne Barham, IRB Compliance Officer, UU Box 1815, Jackson, TN 38305 prior to the expiration date. This approval expires one year from the approval date, and must be renewed prior to that date if the study is ongoing.
2. At the end of one year from the approval date, if the project is not finished or terminated, a Continuing Review application must be completed and approved to continue the project. If approval is not obtained, the human consent form is no longer valid and accrual of new subjects must stop.
3. Any adverse effects must be reported to the IRB on the Adverse Effects Form. Adverse events should be reported to the IRB within 10 working days. Examples include unexpected complications in a subject, missteps in the consent documentation, or breaches of confidentiality.
4. No change may be made in the approved protocol without board approval, except where necessary to eliminate apparent immediate hazards or threats to subjects. Such changes must be reported promptly to the board to obtain approval.
5. The stamped, approved human subjects consent form must be used (if applicable). Photocopies of the form may be made.

If you have any questions, please call the Institutional Review Board office at 731.661.5580. The forms referred to above can be found on the Institutional Review Board website at <http://www.uu.edu/programs/irb/>.

  
 Michele Atkins, Ph.D.  
 Chair, Institutional Review Board  
 Union University

  
 Approval Date

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