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# RELIGIOUSNESS AND ALCOHOL USE: EXPLORING THE ROLE OF DESCRIPTIVE DRINKING NORMS

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ABSTRACT OF DISSERTATION

Emily H. Brechting

The Graduate School  
University of Kentucky

2007

RELIGIOUSNESS AND ALCOHOL USE:  
EXPLORING THE ROLE OF DESCRIPTIVE DRINKING NORMS

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ABSTRACT OF DISSERTATION

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A dissertation submitted in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy in the  
College of Arts and Sciences  
at the University of Kentucky

By  
Emily H. Brechting

Lexington, Kentucky

Director: Dr. Charles R. Carlson, Professor of Psychology

Lexington, Kentucky

2007

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## ABSTRACT OF DISSERTATION

### RELIGIOUSNESS AND ALCOHOL USE: EXPLORING THE ROLE OF DESCRIPTIVE DRINKING NORMS

Alcohol use in young adults requires continued attention due to the significant number of problems related to alcohol consumption. The alcohol use literature has explored a variety of constructs related to alcohol use in young adults including religiousness. The aims of the current study were to demonstrate the relationships between religiousness and alcohol use, explore the associations between religiousness and descriptive drinking norms, replicate the relationships between drinking norms and alcohol outcomes, and explore the mediating role of descriptive drinking norms on the relationships between religiousness and alcohol outcomes. Three hundred and thirty-three undergraduate students ( $M=19.72$  years old;  $SD=1.1$ ) completed questionnaires assessing religiousness, descriptive drinking norms, alcohol consumption, and alcohol-related consequences. Religious commitment and comfort were inversely associated with alcohol consumption and alcohol-related consequences; religious strain was positively associated with alcohol-related consequences but not significantly related to alcohol consumption. Religious commitment and comfort were inversely associated with drinking norms for one's close friends; religious commitment was also inversely related to drinking norms for the average person his/her age. The significance of the relationships between drinking norms and alcohol outcomes depended on the specific drinking norm target; however the majority of drinking norms were positively associated with personal drinking behavior. Finally, perceptions of close friends' drinking behavior at least partially mediated the relationships between religious commitment and comfort and alcohol outcomes. This study contributed to the current literature by examining multiple aspects of religiousness and alcohol use, exploring the role of descriptive drinking norms, and empirically testing a theoretical model explaining the role of religiousness in alcohol use.

**KEYWORDS:** Religiousness, Alcohol Use, Drinking Norms, Young Adults, Adolescents

Emily H. Brechting

January 15, 2007

RELIGIOUSNESS AND ALCOHOL USE:  
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DISSERTATION

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The Graduate School  
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## Chapter One

### Introduction

#### *Background*

Alcohol use in young adults requires continued attention due to the significant number of problems related to alcohol consumption. These negative outcomes include academic failure, accidental death, delinquency, mental health issues, motor vehicle accidents, physical symptoms, spread of disease, suicide, and unwanted sexual contact (Arria, Dohey, Mezzich, Bukstein, & Van Thiel, 1995; Kann et al., 1996; Windle, 1999). According to data from the National Institute on Drug Abuse sponsored Monitoring the Future study, approximately 80% of young adults who are one to four years post high school graduation reported consuming alcohol in the past year (Johnston, O'Malley, Bachman, & Schulenberg, 2006). More specifically, 83% of college students and 77% of counterparts not attending college endorsed alcohol use in the past year. When more recent alcohol consumption was explored, 68% of college students and 59% of same-age peers endorsed alcohol use in the past thirty days. Considering heavy consumption of alcohol or binge drinking—drinking five or more drinks on one occasion, 40% of college students and 35% of peers not attending college reported binge drinking in the two weeks prior to the assessment. Clearly, alcohol use in young adults is widespread and given the myriad of alcohol-related consequences, alcohol consumption in this population requires continued investigation.

The alcohol use literature has explored a variety of constructs related to alcohol use in young adults including ethnic background, socioeconomic status, athletic participation, membership in Greek organizations, as well as peer consumption and attitudes about alcohol use. Recently, the role of religiousness in alcohol use has gained increasing attention (Hood, Spilka, Hunsberger, & Gorsuch, 1996; Wallace, Forman, Caldwell, & Willis, 2003). Religiousness has been variably defined as adherence to the beliefs or doctrines of an institution, a collection of beliefs in a divine being or higher power, and rituals or other behaviors focused on the higher power (Argyle & Beit-Hallahmi, 1975; Koenig, McCullough, & Larson, 2001; O'Collins & Farrugia, 1991). The current paper adopts the definition suggested by Zinnbauer where religiousness refers to “a personal or group search for the sacred that unfolds within a traditional sacred context” (Zinnbauer & Pargament, 2005, pg. 35). Within this framework, religiousness

can be understood as one's pursuit for the sacred that is embedded within the context of organized faith.

Following an extensive review of the adolescent and young adult alcohol use literature, the author proposed a social developmental model for understanding the relationship between religiousness and alcohol consumption. The Social Developmental Model for Adolescent-Young Adult Alcohol Use is based on social learning theory and includes additional aspects from social control theory, Koenig et al.'s (2001) physical and mental health models, as well as other constructs from the religiousness and alcohol use literature. In the paragraphs below, constructs included in the model are described and relationships between the constructs outlined to explain the proposed direct and indirect effects of religiousness on alcohol use (Figure 1).

*Demographic and Genetic Influences.* This construct comprises characteristics such as age, gender, and ethnicity, in addition to genetic factors that could include susceptibility to alcohol.

*Developmental Environment.* Several characteristics of the parent(s)/primary care giver are contained in this construct such as parental/caregiver religiousness and parental alcohol use/abuse. Family attachment and communication style combined with family norms, rules, expectations, and parental involvement and monitoring contribute to the developmental environment construct. Developmental environment also includes abuse or neglect and other stressful life events such as illness, parental separation/divorce, and bereavement.

*Religiousness.* As indicated above, religiousness may be conceptualized in a variety of ways. This construct includes religious behaviors such as service attendance, engagement in religious programs, prayer, and reading religious materials. Religiousness also contains religious beliefs and their importance as well as formal instruction. Finally, one's relationship with God/Higher Power is also included in this construct. It should be noted that while the model focuses primarily on testable aspects of religiousness (e.g., religious behaviors), aspects of religiousness that are untestable (e.g., relationship with God/Higher Power) are not excluded.

*Values.* This construct may be understood as representing one's moral compass. Attitudes, morals, and specific beliefs such as proscriptiveness are included in the values construct. Also within this construct are altruism, stewardship, empathy, and desires to honor or please.



*Person Variables and Resources.* This construct includes aspects of temperament such as impulsivity, sensation seeking, optimism, and urgency (i.e., the tendency to make rash decisions when experiencing distress). Also contained are resources such as coping skills, world view, goals, prior experiences, cognitive appraisals, support seeking, distress tolerance, and hope. Other resources include awareness of self, sense of worth, expectancies and social norms (general and alcohol-specific).

*Mental Health.* Mental health includes elements such as sadness, worry, anxiety, and depression. Also included are well-being and satisfaction with life.

*Social Context.* This broad construct includes general aspects such as peer relationships, peer attitudes and beliefs, and current school environment. Social context also contains alcohol-specific elements such as peer alcohol use, modeling of alcohol use, as well as peer expectations and consequences for alcohol consumption.

*Health Behaviors and Choices.* Health behaviors and choices comprise components such as sleeping patterns, diet, and exercise. Also included are tobacco use, sexual behavior, drug use, driving, and other safety decisions.

*Alcohol Use.* Several aspects of alcohol use are included in this construct such as frequency of use, quantity consumed, and binge drinking. Alcohol-related behaviors (e.g., driving while intoxicated) and problems resulting from consumption (e.g., interpersonal consequences) also belong in this construct.

Our hypothesized relationships between the aforementioned variables results in a model as follows.

*Demographic and Genetic Influences—Religiousness (A).* As mentioned previously, ethnic differences in religiousness repeatedly emerge in the literature (Amey, Albrecht, & Miller, 1996; Brown, Parks, Zimmerman, & Phillips, 2001). Gender and age are also associated with religiousness such that younger and female adolescents and young adults report higher levels of religious commitment and religious behaviors (Francis, 1997).

*Developmental Environment—Values (B).* Childhood training contributes to value and character development (Koenig et al., 2001). Family interactions and bonding also facilitate the development of traditional attitudes and values (Bahr, Maughan, Marcos, & Li, 1998; Mason & Windle, 2001).

*Developmental Environment—Person Variables and Resources (C).* Attachment to parents and family members creates feelings of worth and thus increases self-esteem (Rodell & Benda, 1999). Developmental environment including family rules or norms, parental monitoring, and learning history impact alcohol expectancies (e.g., effects of alcohol, safety of use), norms, and other considerations for use (e.g., likelihood of being caught) (Fischer, Smith, Anderson, & Flory, 2003; Stark, 1986).

*Developmental Environment—Religiousness (D).* Family provides a context for the exploration and development of religiousness and its values (Mason & Windle, 2001; Regnerus, 2003; Stark, 1986). Indeed, family attachment and relationship satisfaction have been repeatedly linked to religiousness (Bahr et al., 1998). Strength of parental faith and religious traditions showed strong associations with adolescent and young adult religiousness (Myers, 1996; Perkins, 1987), though this effect decreased over time (Burkett, 1993). Based on her work and reviews of the literature, Cornwall (1987) described parents and family as the greatest influences on religious socialization, beyond the effects of religious organizations or peers. Family discussions about religious experiences and commitment as well as family worship (e.g., scripture reading, prayer, and devotions) model religiousness (Lee, Rice, & Gillespie, 1997).

*Person Variables and Resources—Mental Health (E).* Many person variables and resources such as acceptance, coping skills, and world view impact mental health (Koenig et al., 2001). Self-esteem has been inversely associated with several mental health outcomes such as depression and suicide (Benson, 1993; Ellison & Levin, 1998). Religious involvement supports cognitions and thought patterns that influence the appraisal of stressors and the experience of distress (Dull & Skokan, 1995).

*Religiousness—Values (F).* Religious involvement provides adolescents and young adults with standards to guide their decisions (Amoateng & Bahr, 1986) and influences specific beliefs, such as attitudes about alcohol use (Burkett, 1993; Clarke, Beeghley, & Cochran, 1990; Hadaway, Elifson, & Petersen, 1984; Park, Ashton, Causey, & Moon, 1998). Religious involvement provides opportunities to learn and embrace conventional values and behaviors as modeled by peers and adults (Marcos, Bahr, & Johnson, 1986; Mason & Windle, 2001). Additionally, interactions with members of one's religious community affirm values and how they are viewing and managing lifestyle events and challenges (Ellison, 1993; Ellison & Levin, 1998).

*Religiousness—Person Variables and Resources (G).* Religious involvement contributes to coping skills and resources (e.g., positive reframing, seeking emotional and instrumental support, and receiving guidance or comfort from scripture) for dealing with life stressors (Dull & Skokan, 1995; Dunn, 2005; Koenig et al., 2001; Pargament, 1997). In addition to providing resources, religiousness also provides meaning and purpose (Amoateng & Bahr, 1986; Bahr et al. 1998; Maton & Wells, 1995), fosters hope and optimism, and promotes self-esteem (Ellison & Levin, 1998). In fact, regardless of several operationalizations of religiousness, religiousness has been linked to higher self-esteem and self-perception (Ellison, 1993; Watson, Morris, & Hood, 1988). Additionally, the practice of prayer promotes a sense of influence and decreases pressure to control the situation due to beliefs that prayer can alter the outcome or change their view of the event and how the event impacts them (Dull & Skokan, 1995; Maton & Wells, 1995). Religious teachings about challenges and suffering also impact one's world view (Dull & Skokan, 1995). Challenges are interpreted as a single event within a larger life, considered inevitable, and viewed as having purpose or meaning.

*Religiousness—Mental Health (H).* In a comprehensive review of the literature, Koenig et al. (2001) found religiousness associated with less depression, suicide, and anxiety and related to greater well-being. It should be noted that this review was not focused on adolescents or young adults and the majority of included studies used adult samples. Stack (1992) reported a general association between religious commitment/orientation with suicide. In fact, religiousness emerged as the second strongest predictor—behind gender—of suicidal ideation and suicide attempts in adolescents, beyond the effects of age, education, and family variables (Donahue & Benson, 1995). Religiousness may impact mental health by eliciting positive emotions or experiences (e.g., forgiveness, love, contentment) or protecting against negative emotions or experiences (e.g., guilt, regret) (Ellison & Levin, 1998).

*Religiousness—Health Behaviors and Choices (I).* Religiousness supports a healthy lifestyle by proscribing specific behaviors (Ellison & Levin, 1998). Many religions also highlight responsibility for general health and physical self care. Some faith organizations advocate specific health maintenance behaviors (e.g., limiting tobacco use, eating a healthy diet, safe sexual practices) that impact health outcomes (Gorsuch, 1995; Levin & Vanderpool, 1991). The view that God/Higher Power controls one's health influences decisions about behaviors that affect health (e.g., tobacco use, exercise). The view of God/Higher Power as in control may also

contribute to a sense of invulnerability leading individuals to shed responsibility for self-care and health maintenance because they assume protection (Willis, Wallston, & Johnson, 2001).

*Religiousness—Social Context (J).* Religiousness influences social context in many ways. Religious adolescents may seek out non-using peers and those with similar beliefs (Burkett & Warren, 1987; Sutherland & Shepherd, 2001). Membership in religious groups also limits time available for alcohol-using peers and may involve sanctions for alcohol use (Gorsuch, 1995). Bahr et al. (1998) described this process as adolescents developing a network of non-using friends with non-tolerant alcohol-related attitudes. Several researchers posited that religious attendance and involvement provide access to positive role models (Amey et al., 1996; Eccles, Barber, Stone, & Hunt, 2003; Ellison & Levin, 1998). Religiously involved and committed adolescents and young adults receive formal and informal social support as part of a group with similar values and beliefs (Brownfield & Sorenson, 1991; Ellison & Levin, 1998).

*Values—Person Variables and Resources (K).* Attitudes and values about right and wrong contribute to personal norms. Values, health beliefs, and proscriptiveness influence alcohol norms and expectancies. Following continued learning from experiences and interactions with the social context, norms and expectancies are altered and updated.

*Values—Social Context (L).* Values and beliefs have been significantly associated with peer group, such that individuals with conventional values and beliefs have fewer substance-using peers (Marcos et al., 1986). Belief that drinking is sinful has been associated with a lower proportion of friends who consume alcohol (Burkett, 1993).

*Social Context—Person Variables and Resources (M).* Social context may relate to person variables and resources in several ways including through alcohol use norms and expectancies. According to Borsari and Carey (2001), young adults consistently rated close friends and typical students as heavier drinkers and more comfortable with or supportive of alcohol use than themselves. Further, elevated norms create a climate of false permissiveness and acceptance, which may promote increased drinking.

*Social Context—Mental Health (N).* Supportive relationships, often increased through religious involvement, contribute to lower stress levels, greater well-being, and overall mental health (Ellison & Levin, 1998; Strawbridge, Cohen, Shema, & Kaplan, 1997).

*Social Context—Health Behaviors and Choices (O).* Similar to its impact on alcohol use, social context influences behaviors such as smoking, though group norms and modeling. Social

networks and support provided by religious involvement (e.g., programs, assistance) influence physical health (Strawbridge et al., 1997). Additionally, group values such as fitness or sexual responsibility may impact actual health behaviors and choices.

*Person Variables and Resources—Health Behaviors and Choices (P).* Cognitions and thought patterns, influenced by religiousness, in turn affect health (Dull & Skokan, 1995). Fear or concern about violating one's norms impacts decisions about behavior. Person variables such as self-esteem have been linked to a variety of physical health outcomes and other person variables such as hope and optimism may be linked to physical health as well (Ellison & Levin, 1998).

*Mental Health—Alcohol Use (Q).* Psychological distress may prompt some adolescents and young adults to consume alcohol as a coping mechanism. That is, due to insufficient coping resources or feeling overwhelmed by distress, alcohol use may serve as a strategy for reducing negative mood states (Koenig et al., 2001). Conversely, individuals experiencing minimal or mild psychological distress may not engage in alcohol use as a means of coping.

*Values—Alcohol Use (R).* Standards and values learned from religious involvement aid in navigating alcohol use opportunities (Amoateng & Bahr, 1986). Anti-drinking beliefs learned from religious association were linked to reduced adolescent alcohol consumption (Burkett, 1980, 1993). Traditional attitudes and values, cultivated in family and religious environments, promote conventional or socially acceptable behaviors (Mason & Windle, 2001).

*Social Context—Alcohol Use (S).* Peer influences consistently emerge as significant predictors of alcohol use (Park et al., 1998). Mason and Windle (2001) argued that through associations with peers who use alcohol, adolescents observe alcohol use models, see values favorable to use, and gain access to alcohol. Additionally, peer associations provide knowledge about drinking experiences, means for obtaining alcohol, and strategies for avoiding detection. Peer groups may exert direct and indirect influences on alcohol use (Borsari & Carey, 2001). Direct peer influences entail efforts explicitly targeted at getting a peer to drink (e.g., buying drinks). These efforts may range from polite (e.g., ordering a drink) to more forceful (e.g., drinking games). Indirect peer influences involve peer behaviors that communicate accepted or admired conduct and appropriate behaviors for certain social settings. Such influences convey which behaviors will be reinforced or garner social acceptance within the peer group. Direct and indirect peer influences have been shown to be uniquely associated with alcohol outcomes such

as heavy drinking and alcohol-related problems (Borsari & Carey, 2001; Wood, Read, Mitchell, & Brand, 2004).

*Person Variables and Resources—Alcohol Use (T).* Coping skills, including religious coping and problem-focused coping have been shown inversely related to alcohol use in adolescents and young adults (Brechtling & Giancola, in press; Willis et al., 2001). As alcohol use becomes more common or accepted within a peer group, nondrinkers may be teased, feel like outsiders, or even find themselves excluded from future social events. As such, those with greater self-confidence, maturity, and comfort level in these situations may be able to better resist alcohol use despite pressure (Borsari & Carey, 2001). Positive alcohol expectancies (e.g., increased sociability, decreased anxiety) have been associated with initiation of alcohol use, continued consumption, and problem drinking (Goldman, Brown, Christiansen, & Smith, 1991; Smith, Goldman, Greenbaum, & Christiansen, 1995) whereas negative expectancies—believing that drinking results in negative outcomes—may protect against problem drinking (Leigh & Stacy, 1993). Perceptions of others' drinking behaviors and attitudes about alcohol use (descriptive and prescriptive drinking norms) have been linked to alcohol consumption for the individual (Adams & Nagoshi, 1999; Nagoshi, 1999). Urgency has been linked with higher levels of alcohol consumption and more alcohol-related problems (Fischer, Anderson, & Smith, 2004). Meaning and purpose, resulting from religious involvement, may decrease the appeal of alcohol use (Bahr et al., 1998). Additionally, alcohol use may violate norms and concern or fear of such violations may inhibit alcohol consumption (Ellison & Levin, 1998).

*Health Behaviors and Choices—Alcohol Use (U).* Health behaviors such as smoking and sexual behavior have been linked to alcohol use. Adolescents who smoke reported consuming more alcohol, more frequent alcohol use, and more binge drinking than nonsmokers (Duhig, Cavallo, McKee, George, & Krishnan-Sarin, 2005). Ohene, Ireland, and Blum (2005) demonstrated a significant relationship between early sexual behavior and alcohol use.

*Religiousness—Alcohol Use (V).* Religiousness is consistently associated with alcohol use. However, this relationship has likely been oversimplified by scarce theoretical background and questionable methodological rigor. Many findings supporting this relationship may be better understood with the inclusion of third variables, and thus be reassigned to other categories in this model. Yet, religiousness likely exerts some direct influence on alcohol use. For example, Marcos et al. (1986) found that religious attachment predicted alcohol use independent of peer

group. After controlling for academic ability and aspiration, gender, grade, and number of parents in the home, religiousness significantly predicted several alcohol use variables (Donahue & Benson, 1995). Similarly, Hadaway et al. (1984) found that religiousness remained a significant predictor, even after controlling for other influences such as academic performance, parent-adolescent relationship, and gender. Finally, Dudley et al. (1987) reported that for religious youth “commitment to Christ” was the primary reason for abstaining from alcohol.

There are several relationships among the constructs that are not of primary interest to the model and therefore will not be discussed here. The likelihood of feedback effects within this model is readily acknowledged. However, in order to develop and disseminate a manageable and usable model, we have limited the inclusion of such effects. Instead, we have primarily focused on the development of religiousness and its effects on key variables, including alcohol use. Again, the current model focuses on understanding the relationship between religiousness and alcohol use and does not endeavor to explain all aspects of the included constructs.

The aim of the current study was to examine empirically a portion of this model and to test the proposed relationships between constructs. Specifically, the association between religiousness and drinking norms was investigated and the mediating role of drinking norms on the relationship between religiousness and alcohol use was explored (Figure 2). What follows is an explanation of drinking norms, a brief review of the relationships between these constructs, and specific hypotheses for the proposed study.

### *Drinking Norms*

Research addressing drinking norms distinguishes between descriptive and prescriptive (also called injunctive) drinking norms. According to Borsari and Carey (2001), descriptive norms refer to perceptions of peers’ alcohol use, most often the quantity of alcohol consumed and the frequency of consumption. Said differently, descriptive norms are the norms of what “is.” In contrast, prescriptive norms represent the “ought” norm and include perceptions of others’ approval of alcohol use and perceived moral rules of the social group. Descriptive and prescriptive norms have been shown to account for unique variance in alcohol outcomes and exhibit different responses to interventions (Borsari & Carey, 2001). As descriptive norms focus on perceptions of behavior while prescriptive norms focus on perceived attitudes, these constructs are theoretically distinct. As such, the present study investigated perceptions of drinking behavior and therefore examined young adults’ descriptive drinking norms.

Studies investigating descriptive drinking norms have demonstrated that adolescents and young adults consistently overestimate the quantity and frequency of alcohol consumption by their peers (Perkins & Berkowitz, 1986). That is, perceptions of “typical” drinking behavior exceeded actual levels of drinking quantity and frequency. These misperceptions of peers’ drinking behaviors extend across extracurricular activities (e.g., Greek membership, athletic participation), housing situation (e.g., dormitory, off-campus housing), and gender (Perkins, Meilman, Leichliter, Cashin, & Presley, 1999). In a sample of 180 college students, Baer, Stacy, and Larimer (1991) reported that participants perceived a “typical student” as consuming an average of 16 alcoholic beverages per week when in reality, the actual consumption was approximately nine beverages per week. It should be noted that overestimating peers’ drinking appears to vary as a function of age and gender. In a study of 195 college students, Adams and Nagoshi (1999) found that male students perceived significantly higher drinking norms than female students. Additionally, older students reported higher drinking norms than their younger counterparts.

Further, the discrepancy between perceived and actual drinking increases as the reference group becomes more distal (Baer & Carney, 1993). For example, one might slightly overestimate the alcohol use of others in one’s dormitory complex but would likely grossly overestimate the drinking patterns of “students in general.” Baer and colleagues demonstrated this pattern of overestimating in a subsequent study. Students again estimated their alcohol consumption (mean = 14.3 drinks per week) as less than their best friend (mean = 15.4 drinks per week) and considerably less than that of a typical student (mean = 21.1 drinks per week) (Baer & Carney, 1993). This tendency to overestimate other’s alcohol consumption has been repeatedly demonstrated in the research literature. This pattern of overestimation is concerning as several studies have demonstrated links between drinking norms and alcohol consumption and alcohol-related problems (Adams & Nagoshi, 1999; Nagoshi, 1999; Wood et al., 2001).

#### *Religiousness and Alcohol Use*

The majority of the studies investigating the link between religiousness and alcohol use found a significant inverse relationship (Donahue & Benson, 1995; Koenig et al., 2001). For example, Hays, Stacy, Widaman, DiMatteo, & Downey (1986) found religiousness inversely related to alcohol use; additionally, religiousness exerted the strongest and most consistent effects on alcohol use when compared to other variables such as self-esteem and parental



support. Amoateng and Bahr (1986) demonstrated that involvement with a religious group, regardless of the specific denomination, was associated with less frequent alcohol use and lower consumption quantities. Further, even when the authors controlled for a variety of factors (e.g., number of parents in the home), the relationship between religiousness and alcohol use remained significant. Lorch and Hughes (1985) found that church members were less likely to try alcohol or consume at high levels than nonmembers. Bahr et al. (1998) reported that religiousness composite scores comprising service attendance and importance of religion were inversely related to alcohol consumption. The association between religiousness and alcohol use has also been demonstrated longitudinally. Mason and Windle (2001) reported that religiousness predicted alcohol consumption concurrently and at one year follow-up. Interestingly, religiousness emerged as the strongest predictor, surpassing both peer and family influences. These studies represent a greater body of literature supporting a connection between religiousness and alcohol use.

It should be noted that this relationship emerged between multiple indicators of religiousness (e.g., membership, commitment, participation in religious activities) and several alcohol use outcomes (e.g., frequency of drinking, quantity consumed, and alcohol-related attitudes). Closer review of the literature suggests that the specific nature of the relationship may depend on the dimension of religiousness and aspect of alcohol use under evaluation (Amoateng & Bahr, 1986; Cochran, 1993). For example, Nonnemaker, McNeely, and Blum (2003) compared public and private religiousness as predictors alcohol use in a sample of over 16,000 adolescents from the National Longitudinal Study of Adolescent Health (Add Health). Their results suggested that private religiousness (a combination of frequency of prayer and importance of religion) was more influential on initiating and experimenting with alcohol use whereas public religiousness (a combination of frequency of service attendance and frequency of participation in youth group activities) played a greater role in regular and problematic use. Given these findings, this study investigated several aspects of religiousness and multiple alcohol use outcomes.

### *Religiousness and Drinking Norms*

It was surprising that no studies could be located that specifically assessed the relationship between religiousness and descriptive drinking norms. Two patterns of findings from the literature suggest, however, that religiousness may be associated with such drinking

norms. First, religiousness has been repeatedly associated with attitudes and perceptions about a variety of issues such as sexuality (Cochran & Beeghley, 1991), punishment of criminals (Gallup & Lindsay, 1999), and alcohol use (Francis, 1997). Specifically, Francis (1997) evaluated the impact of religiousness and personality on attitudes about substance use, including alcohol. Francis found that religiousness predicted less permissive attitudes regarding alcohol, even after controlling for gender, age, social class, and personality. Individuals who reported greater religiousness were more likely to consider substance use as wrong than less religious counterparts.

Second, religiousness may also influence drinking norms through its association with peer group. Specifically, higher levels of religiousness have been associated with less peer alcohol use (Bahr et al., 1998). Adolescents who attend services more frequently and/or ascribe greater importance to religion were less likely to associate with alcohol using peers. Religious adolescents may seek out friends with similar beliefs and non-using peers (Burkett & Warren, 1987; Sutherland & Shepherd, 2001). Interactions with peers provide information for the development and refinement of drinking norms. Religious individuals with fewer alcohol-using peers may possess more conservative descriptive drinking norms. That is, due to fewer opportunities to interact with peers consuming at greater levels, these individuals perceive lower levels of consumption by peers.

Given the lack of research investigating the role of religiousness in drinking norms, this study examined the associations between several measures of religiousness and descriptive drinking norms. In addition to reducing this gap in the literature, exploring the relationship between religiousness and descriptive drinking norms may aid in understanding further the association between religiousness and alcohol consumption.

#### *Drinking Norms and Alcohol Use*

Beyond establishing the pattern of overestimating descriptive norms, it is important to understand the impact of these drinking norms. Several studies have demonstrated that perceived drinking norms predict alcohol use and alcohol-related problems for the individual (Adams & Nagoshi, 1999; Mattern & Neighbors, 2004; Nagoshi, 1999; Wood et al., 2001). For example, in a longitudinal study of over 180 young adults, perceptions of one's best friend's drinking behavior significantly predicted personal alcohol consumption at baseline and at follow-up 32 months later (Werner, Walker, & Greene, 1996). More specifically, higher levels of

perceived drinking by the friend were related to more frequent use and greater quantities of alcohol consumption by the individual. These effects were significant for concurrent alcohol consumption as well as drinking behavior for the individual 32 months later. Thombs, Wolcott, and Farkash (1997) also found that descriptive norms for close friends were associated with personal alcohol consumption. Taken together, these studies suggest a significant link between perceived drinking norms and individual drinking behavior.

Given the existing relationship between drinking norms and alcohol consumption, the next step is to understand mechanisms by which norms may affect drinking behavior. Borsari and Carey (2001) posited a two-step process by which perceptions influence personal alcohol consumption. First, the individual compares personal drinking to descriptive drinking norms. This comparison yields a discrepancy between personal use and perceived norms such that the individual tends to engage in lower levels of alcohol consumption. This discrepancy can be understood within the framework of attribution theory. According to attribution theory, individuals have limited information about the attitudes and behaviors of their peers. When individuals observe alcohol use, excessive consumption, or alcohol-related problems, they assume these behaviors to be common. According to Perkins (1997), misperceptions of the prevalence of drinking behaviors result because the observed behaviors are generalized.

The second step by which alcohol perceptions affect personal consumption involves the matching of personal behaviors to the perceived behaviors of the peer group. That is, adolescents and young adults adjust their alcohol consumption to levels similar (e.g., frequency, quantity) to their perceptions of peers' usage, thus adhering to the descriptive norm. Baer et al. (1991) suggest that adolescents and young adults use their perceptions of peers' consumption to gauge their own alcohol use. As a result, adolescents and young adults may change their drinking patterns so as to align with their perceptions of others' drinking. Assuming that they believe others' drinking patterns to be greater than their own, they may consume alcohol in greater quantities and more frequently than if their perceptions of peer consumption were more accurate. Additionally, heavy drinking or alcohol-related problems may be ignored because these patterns of consumption match the perceived drinking of peers. One troubling aspect to this behavior alteration is that the individual's behavior is observed by peers, maintaining the perception of elevated alcohol consumption as the norm in the minds of the observers, thus

continuing the cycle. The aforementioned and other studies suggest that misperceptions about peer alcohol consumption may significantly impact personal use.

Several limitations of the drinking norms literature should be mentioned. First, the conceptualization of norms varies tremendously across studies (Borsari & Carey, 2001). Descriptive and prescriptive norms are often used interchangeably to represent the general construct of drinking norms. For example, one study may use an estimate of the average weekly alcohol consumption of a typical student, a second study may assess the frequency of drinking by the participant's best friend, while a third study measures the perceived approval of drinking by one's peer group. Despite the diversity of these measures, these findings may be all described as drinking norms data. This substantial overlap obscures the drinking norms effect and diminishes a comprehensive understanding of peer influence.

Second, some studies assess perceived norms of several groups (e.g., parents, friends, classmates) whereas other studies focus on the perceptions for one group. A recent review of the descriptive norm literature yielded almost twenty different drinking norms targets (Borsari & Carey, 2001). These targets included "the typical student," "your best friend," "your friends," and "students on campus." Often these findings are compared and contrasted with little recognition of these operationally-defined differences. A further complication is that data suggest some perceptions are more accurate than others. For example, estimates of "best friend" alcohol use have been shown to be more accurate than perceptions of drinking by the "typical student" (Baer & Carney, 1993). As a result, the influences of different groups may be obscured by the research methodology of the studies. Despite these limitations, research investigating drinking norms has significantly expanded investigators' understanding of adolescent and young adult alcohol consumption and their alcohol-related behaviors. This understanding has contributed to the development of prevention and intervention efforts. Within the framework of this growing body of scientific literature, the following hypotheses emerge:

#### *Study Hypotheses*

*Hypothesis 1:* In congruence with the literature (e.g., Koenig et al., 2001), religiousness will be inversely associated with alcohol consumption.

*Hypothesis 2:* Religiousness will be inversely related to descriptive drinking norms. Specifically, individuals reporting higher levels of religiousness will endorse lower quantity and frequency descriptive norms (Bahr et al., 1998; Francis, 1997).

*Hypothesis 3:* Descriptive drinking norms will be positively associated with alcohol outcomes (Borsari & Carey, 2001). Individuals perceiving higher descriptive norms will report higher levels of alcohol consumption than counterparts reporting lower descriptive norms.

*Hypothesis 4:* The relationship between religiousness and alcohol use (*Hypothesis 1*) will be partially mediated by descriptive drinking norms.

## Figure Captions

Figure 1.1. The Social Developmental Model for Adolescent-Young Adult Alcohol Use.

Figure 1.2. Selected portion of the Social Developmental Model for Adolescent-Young Adult Alcohol Use currently under investigation.

Figure 1.1

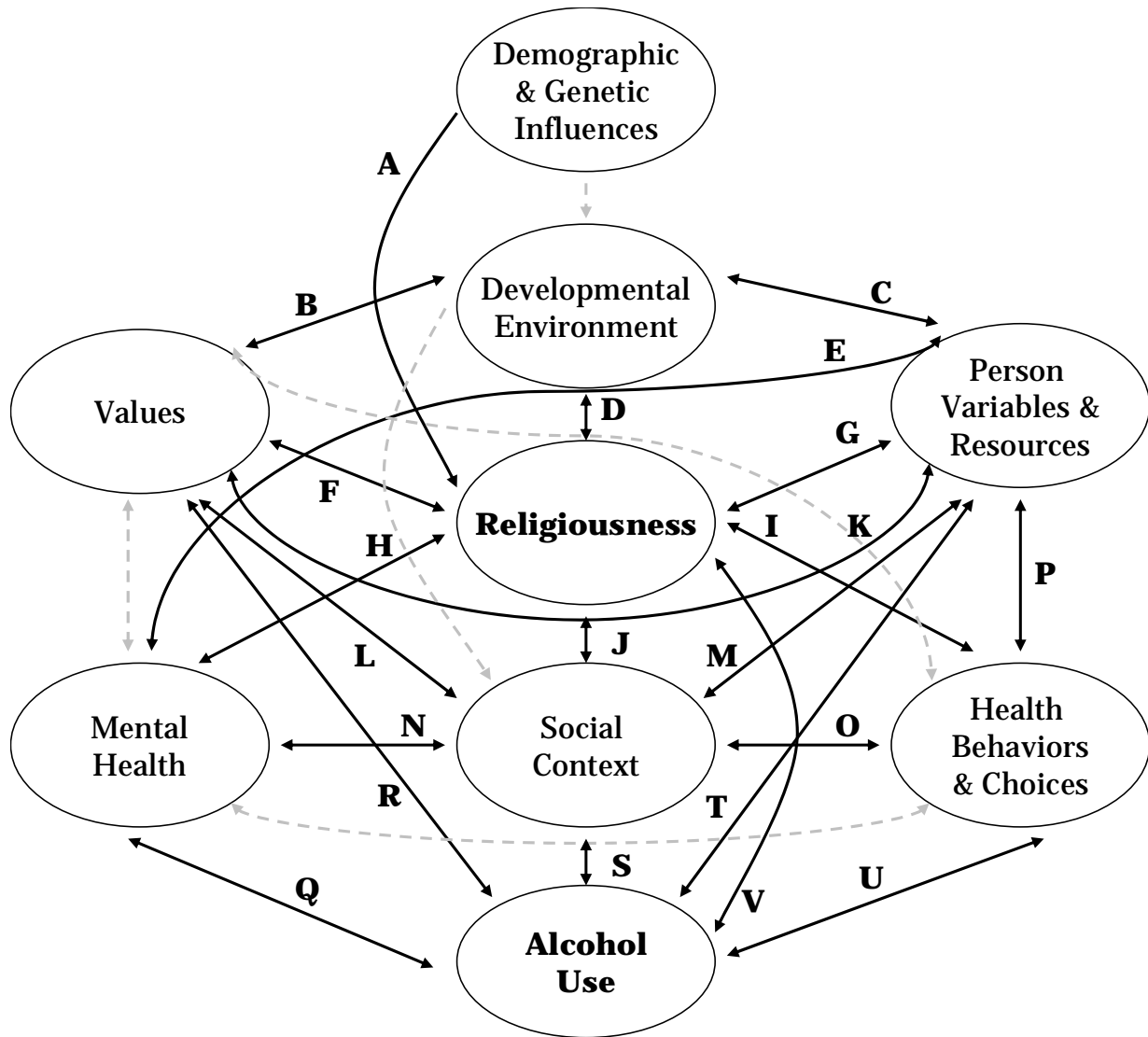
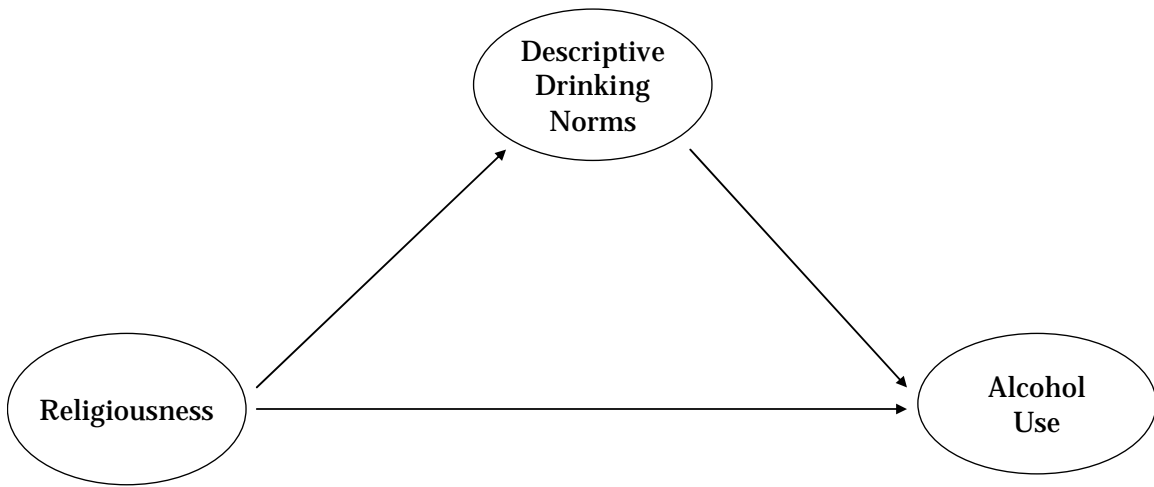


Figure 1.2





## Chapter Two

### Method

#### *Participants*

Participants were 333 students from the University of Kentucky who were attending undergraduate classes (123 were males, 204 were females, 6 people did not answer this question). Participants ranged in age from 18 to 25 years, with a mean age of 19.72 years ( $SD = 1.1$ ). Thirteen percent were first-year students, 44% were second-year students, 26% were third-year students, and 17% were fourth-year students. Two hundred ninety-six participants (88.9%) were Caucasian, 24 (7.2%) were African American, four (1.2%) were Asian American, eight (2.4%) reported other ethnic backgrounds, and one person (0.3%) did not respond to this item. With regard to religious affiliation, 183 participants (55%) reported Protestantism, 103 (30.9%) Catholicism, 15 (4.5%) reported other religious affiliations including Hinduism and Judaism, 28 (8.4%) reported no religious affiliation, and four (1.2%) did not respond to this question.

#### *Procedures*

Participants were recruited through undergraduate psychology courses (e.g., general psychology, developmental psychology) to participate in a study examining lifestyle factors and health. Faculty announced this study in their courses and offered course credit to prospective participants. Students who elected not to participate in this study were given an alternative course credit activity. Thus, participation in this study was completely voluntary. After providing informed consent, participants were given a questionnaire packet to complete and were instructed not to put any identifying information on the packets so their responses would remain anonymous. Upon completion of the questionnaire packet, participants received course credit for their participation. The Institutional Review Board of the University of Kentucky approved the study protocol and the treatment of participants was in accordance with the ethical standards of the American Psychological Association.

#### *Measures*

*Demographics.* Participants were asked to indicate their age, gender, ethnic background, highest level of education attained, and whether or not they were a member in a Greek organization.

*Social Desirability.* To assess and control for social desirability, we administered the Marlowe-Crowne Form C (MC-C; Reynolds, 1982), a 13-item measure that assesses a person's

tendency to engage in impression management. Participants responded to each item by indicating either “true” or “false.” Sample items include “I sometimes feel resentful when I don’t get my way,” and “No matter who I’m talking to, I’m always a good listener.” Higher scores on the MC-C are indicative of greater impression management. Cronbach’s alpha in this study was  $\alpha = .63$ .

*Religiousness.* To assess religiousness, we administered the Religious Commitment Inventory—10 (RCI-10; Worthington et al., 2003). The RCI-10 assesses adherence to one’s religious beliefs and values as well as the application of religiousness in daily living. Responses ranged from 1 (not at all true) to 5 (totally true). Sample items include “Religious beliefs influence all my dealings in life” and “Religiousness is especially important to me because it answers many questions about the meaning of life.” There are two subscales of the RCI-10, interpersonal religious commitment and intrapersonal religious commitment. However, exploratory and confirmatory factor analyses suggest use of the total score due to high correlation between the factors. The total score, obtained by summing responses to all ten items, was used in this study. Cronbach’s alpha for this study was .95.

We also administered the Religious Comfort and Strain Scale (Exline, Yali, & Sanderson, 2000), a 20-item questionnaire assessing positive and negative religious experiences. Responses were given using a 4-point scale ranging from 0 (not at all) to 3 (extremely). The religious comfort subscale is comprised of seven items. Examples of religious comfort items include “Trusting God to protect and care for you” and “Feeling comforted by your faith.” The religious strain subscale is comprised of thirteen items and includes items such as “Bad memories of past experiences with religion or religious people” and “Difficulty trusting God.” Cronbach’s alphas for the study were .95 for religious comfort and .82 for religious strain.

Additionally, several single item measures of religiousness often used in the literature were administered. Participants were asked to indicate their current religious preference. Participants also rated how important their religion is to them. Responses were given using a 5-point scale ranging from 1 (not at all) to 5 (extremely). Finally, participants indicated the extent to which they viewed themselves a religious person. Response options ranged from 1 (not religious) to 4 (very religious).

*Alcohol Use.* On the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985), participants described their typical alcohol consumption on each day of the week in the past month. For each day of the week, participants reported the typical number of drinks usually

consumed as well as the typical number of hours spent drinking during the past month. Responses were then summed to yield two scores representing the quantity of use and time spent drinking (duration of use). A single item measure was also used to assess frequency of alcohol consumption. Participants reported the frequency of alcohol consumption during the past year (e.g., twice per week). Responses ranged from zero, indicating no alcohol use, to fourteen, indicating daily alcohol use.

*Alcohol-related Problems.* To assess alcohol-related problems, we administered the Drinker Inventory of Consequences (DrInC; Miller, Tonigan, & Longabaugh, 1995), a 45-item questionnaire assessing negative consequences of alcohol use. Participants indicated whether they had ever experienced each consequence and rated the frequency of the consequence. Responses were given using a 4-point scale ranging from 0 (never) to 3 (daily or almost daily). A total scale score, which provides an index of overall severity of alcohol-related problems, is obtained by summing responses to all 45 items. There are also five subscales representing five domains of drinking consequences. These subscales may be used to tailor treatment efforts to the individual and are as follows: interpersonal (e.g., “My family or friends have worried or complained about my drinking”), intrapersonal (e.g., “I have felt bad about myself because of my drinking”), social (e.g., “I have missed days of work or school because of my drinking”), impulsive (e.g., “I have taken foolish risks while drinking”), and physical (e.g., “I have been sick and vomited after drinking”). Cronbach’s alpha in this study was .92 for the total scale and alphas ranged from .69 to .83 for the subscales. The total scale was used in this study as an overall index of alcohol-related problems.

*Perceived Drinking Norms.* To assess drinking norms, we administered a version of the Drinking Norms Rating Form (DNRF; Baer et al., 1991). Participants estimated how often (frequency) and how much (quantity) different types of people drink. Participants estimated drinking consumption for his/her close friends, an average student on his/her campus, an average member of a fraternity, an average member of a sorority, and an average person his/her age. Responses ranged from 1 (less than once a month) to 7 (once a day) for frequency and 1 (0 drinks) to 6 (more than 8 drinks) for quantity.

#### *Data Analyses*

A two-part analytic strategy was used to test the study hypotheses. First, a correlation matrix was created to evaluate the relationships between religiousness, descriptive drinking

norms, and alcohol use outcomes. Second, the role of descriptive drinking norms as a mediator in the relationship between religiousness and alcohol use was tested. Each of the religiousness variables was evaluated in order to determine whether or not drinking norms mediated the relationships among the religiousness variables and alcohol outcomes. According to Baron and Kenny (1986), four conditions must be met to test for mediation. First, a significant relationship must exist between the independent variable and the dependent variable. Second, there must be a significant relationship between the independent variable and the mediating variable. Third, the mediator must be significantly associated with the dependent variable. And, fourth, when the mediator is controlled, the previously significant relationship between the independent variable and dependent variable decreases significantly. In the event of mediation, Sobel's (1990) significance test was used to determine the significance of the indirect effect of the independent variable on the dependent variable via the mediator.

## Chapter Three

### Results

#### *Preliminary Analyses*

As indicated in the methods section, participants completed two measures of religiousness yielding a total of three scales of religiousness (religious commitment, religious comfort, and religious strain) as well as two single-item indicators of religiousness (importance of religiousness and extent of religiousness). Preliminary analyses indicated that religious importance and extent of religiousness were highly correlated with religious commitment and comfort (measures of positive religious experience), with correlations ranging from .714 to .790 ( $ps < .01$ ). Further, religious importance and extent of religiousness did not predict alcohol outcomes beyond the effects of religious commitment and comfort (see Table 3.1 for an example). Therefore, subsequent analyses will focus on religious commitment, religious comfort, and religious strain.

Table 3.2 displays the associations between demographic variables and social desirability and the remainder of the study variables. Gender and ethnic background were significantly associated with religious commitment and comfort such that male participants and Caucasian participants reported lower levels of religiousness than females and non-Caucasian participants. Social desirability was associated with the religiousness variables such that those engaging in a more socially desirable response style also reported greater religious comfort and less religious strain than those not exhibiting this response style. Relationships between background variables and specific drinking norms can be seen in Table 2. Two general patterns should be noted. First, gender was associated with various drinking norms such that males tended to report greater frequency and higher levels of consumption for several norms targets as compared to females. Second, Greek membership was associated with drinking norms in an interesting manner. Non-Greek members rated their close friends as drinking less frequently and in lesser quantities than Greek counterparts. On the other hand, non-Greek members rated other targets (e.g., average student on campus, member of a sorority, member of a fraternity) as drinking in greater quantities and more frequently than Greek members.

With regard to alcohol outcomes, gender and Greek membership were consistently related to alcohol consumption and alcohol-related problems. Specifically, male participants and Greek members reported more frequent use, greater quantities of consumption, longer durations

of use, and more alcohol-related consequences than females and non-Greek members. Additionally, ethnic background was associated with alcohol outcomes such that Caucasian participants reported more frequent consumption and more alcohol-related problems than non-Caucasians. Finally, social desirability was associated with alcohol outcomes; those engaging in a more socially desirable response style reported lower levels of alcohol use and fewer alcohol-related consequences. Given the associations between the background variables and the mediating and dependent variables, age, gender, Greek membership, ethnic background, and social desirability were included as covariates in the mediation analyses.

#### *Religiousness and Alcohol Outcomes*

Table 3.3 displays the correlations for the religiousness variables and alcohol outcomes. As predicted in Hypothesis 1, religious commitment and comfort were negatively associated with the frequency, quantity, and duration of alcohol use (all  $ps < .05$ ) with correlations ranging from  $-.128$  to  $-.477$ . Religious commitment and comfort were inversely related to alcohol-related consequences ( $ps < .01$ ) with correlations of  $-.367$  and  $-.271$ , respectively. Specifically, higher levels of religious commitment and comfort were associated with fewer alcohol-related problems, as predicted in Hypothesis 1. Contrary to predictions from Hypothesis 1, religious strain was not related to alcohol consumption. However, religious strain was positively associated with alcohol-related problems as expected ( $r = .170, p < .01$ ), such that more negative religious experiences were related to more consequences from drinking. In summary, Hypothesis 1 was supported in most associations with the exception of religious strain and alcohol consumption.

#### *Religiousness and Descriptive Drinking Norms*

Table 3.4 displays the correlations for the religiousness variables and drinking norms. As predicted in Hypothesis 2, religious commitment and comfort were inversely related to perceptions of drinking behavior for close friends ( $ps < .01$ ), with correlations ranging from  $-.234$  to  $-.475$ . Individuals with higher religious commitment and comfort scores reported that their close friends consumed fewer alcohol beverages and drank alcohol less frequently than those with lower religiousness scores. Additionally, religious commitment was inversely associated with drinking norms for the average person his/her age such that higher commitment scores were related to lower perceived quantities of use. Religious commitment and comfort were not significantly associated with the remaining drinking norm ratings even though these relationships

were predicted by Hypothesis 2. Additionally, religious strain was not significantly associated with any of the drinking norm ratings as predicted by Hypothesis 2. In summary, Hypothesis 2 received support for specific descriptive drinking norms but was not supported for the remaining drinking norms.

#### *Drinking Norms and Alcohol Outcomes*

Table 3.5 displays the Pearson correlations for the religiousness variables and drinking norms. In contrast to the predictions of Hypothesis 3, the significance of the relationships between drinking norms and alcohol use outcomes in this sample depends on the drinking norm target and the alcohol outcome variable. A few general patterns will be noted here. First, as predicted by Hypothesis 3, perceptions of close friends' drinking behaviors (i.e., frequency, quantity) were positively associated with all alcohol use outcomes as well as alcohol-related consequences ( $ps < .01$ ), with correlations ranging from .478 to .668. That is, higher levels of perceived drinking in one's group of friends were associated with higher levels of personal consumption and greater numbers of problems resulting from one's drinking. Similarly, young adults' perceptions of alcohol use quantity for same age peers were positively associated with all alcohol use variables and alcohol-related consequences as predicted, with correlations ranging from .170 to .312 ( $ps < .01$ ). Finally, perceptions of the quantity of use by fraternity members were related to alcohol use (frequency and quantity) as well as problems related to alcohol (rs .183 to .272,  $ps < .01$ ). Again, higher levels of perceived drinking in these groups were associated with greater personal consumption and alcohol-related problems. As shown in Table 5, all drinking norms were not related to alcohol outcomes as predicted in Hypothesis 3. In summary, Hypothesis 3 was partially supported as the majority of associations between drinking norms and alcohol use outcomes were as predicted.

#### *Variables Meeting the Preconditions for Mediation*

As described above, a specific pattern of relationships must exist before mediation analyses can be attempted. First, the independent variable (religiousness) must be associated with the dependent variables (alcohol use and alcohol-related problems). As can be seen in Table 3, religious commitment and comfort were associated with all alcohol outcomes. Religious strain was not associated with alcohol use but was related to alcohol-related problems. Second, the independent variable (religiousness) must be associated with the mediating variables (drinking norms). As can be seen in Table 4, religious commitment was associated with

perceptions of alcohol use frequency and quantity for close friends as well as quantity of use by the average person his/her age. Religious comfort was also associated with perceptions of close friends' frequency and quantity of alcohol use. Religious strain was not significantly associated with any of the drinking norms. As such, only close friends' frequency, close friends' quantity, and average person's quantity were considered further as potential mediators. Third, the mediating variables must be associated with the dependent variables. As can be seen in Table 5, perceptions of close friends' frequency and quantity of alcohol use were associated with all dependent variables. Similarly, perceived quantity of consumption for the average person his/her age was related to all dependent variables.

As a result, the mediation analyses examined whether drinking norms for close friends (quantity and frequency) mediated the relationships between religious commitment and alcohol outcomes (frequency, total drinks, total hours drinking, and alcohol-related consequences) and between religious comfort and these same alcohol outcomes. Additionally, the mediation analyses examined whether drinking norms for the average person (quantity) mediated the relationship between religious commitment and alcohol outcomes. As indicated in Hypothesis 4, we predicted that the relationships between religious commitment and alcohol outcomes and between religious comfort and alcohol outcomes would be at least partially mediated by perceptions of friends' drinking behaviors. Similarly, it was expected that the relationships between religious commitment and alcohol outcomes would be at least partially mediated by drinking norms for the average person. The mediating role of each drinking norm will be discussed in turn.

#### *The Mediating Role of Close Friends' Frequency of Alcohol Use*

As can be seen in Figure 3.1, drinking norms for friends' frequency of alcohol use fully mediated the relationships between religious commitment and quantity of alcohol use and between religious commitment and duration of alcohol use. Further, drinking norms for friends' frequency of alcohol consumption partially mediated the relationships between religious commitment and frequency of alcohol use and between religious commitment and alcohol-related consequences. The first model depicts the mediating role of friends' perceived drinking frequency on the relationship between religious commitment and frequency of alcohol use. The estimate for the indirect effect was Sobel's test = -7.01 ( $p < .001$ ) which suggests that the association between religious commitment and alcohol use frequency was mediated by this



drinking norm. Analyses revealed that background variables, perceptions of friends' frequency of use, and religious commitment combined to account for 50% of the variance in the prediction of frequency of alcohol consumption. When controlling for this drinking norm, religious commitment contributed an additional 3.2% of variance ( $F$  for  $\Delta R^2 = (1, 313) = 20.22, p < .001$ ) to the prediction of alcohol use frequency, indicating partial mediation.

The second model in Figure 3.1 shows the mediating role of friends' perceived drinking frequency on the relationship between religious commitment and quantity of alcohol use. The estimate for the indirect effect was Sobel's test = -4.26 ( $p < .001$ ), which suggests that the association between religiousness and alcohol use quantity was mediated by this drinking norm. Analyses revealed that background variables, religious commitment, and perceptions of friends' drinking frequency combined to account for 34% of the variance in the prediction of quantity of alcohol consumption. When controlling for this drinking norm, religious commitment contributed only an additional 0.8% of variance ( $F$  for  $\Delta R^2 = (1, 295) = 3.57, p > .05$ ) to the prediction of alcohol use quantity, indicating full mediation of the relationship between religious commitment and quantity of alcohol use by friends' perceived frequency of alcohol consumption.

The third model in Figure 3.1 depicts the mediating role of friend's perceived frequency of alcohol use on the relationships between religious commitment and the amount of time spent drinking (duration of use). As with the previous model, we found full mediation. The estimate for the indirect effect was Sobel's test = -3.57 ( $p < .001$ ), which suggests that the association between religiousness and duration of alcohol use was mediated by this drinking norm. Analyses revealed that background variables, religious commitment, and perceptions of friends' drinking frequency combined to account for 24% of the variance in the prediction of duration of alcohol consumption. When controlling for this drinking norm, religious commitment contributed only an additional 0.5% of variance ( $F$  for  $\Delta R^2 = (1, 292) = 1.91, p > .05$ ) to the prediction of alcohol use duration, indicating full mediation.

Finally, the fourth model in Figure 3.1 shows the mediating role of friends' perceived drinking frequency on the relationship between religious commitment and alcohol-related consequences. The estimate for the indirect effect was Sobel's test = -4.99 ( $p < .001$ ), which suggests mediation. Analyses revealed that background variables, religious commitment, and this drinking norm combined to account for 35% of the variance in the prediction of alcohol-

related problems. When controlling for perceptions of friends' drinking frequency, religious commitment contributed a small but significant additional 1.0% of variance ( $F$  for  $\Delta R^2 = (1, 313) = 4.71, p < .05$ ) to the prediction of alcohol-related consequences, indicating partial mediation.

We also examined the mediating role of friends' perceived frequency of alcohol use on the relationships between religious comfort and frequency of alcohol use and between religious comfort and alcohol-related consequences. As can be seen in Figure 3.2, drinking norms for friends' frequency of alcohol consumption partially mediated the relationships between religious comfort and frequency of alcohol use and between religious comfort and alcohol-related problems. Alcohol use quantity and duration of alcohol consumption were omitted as dependent variables because religious comfort did not predict these outcomes beyond the effects of the background variables (partial correlations  $-.105$  and  $-.086$ , respectively,  $ps > .05$ ). The first model in Figure 4 depicts the mediating role of friends' perceived drinking frequency on the relationship between religious comfort and frequency of alcohol use. The estimate for the indirect effect was Sobel's test =  $-3.97$  ( $p < .001$ ) indicating that the association between religious comfort and alcohol use frequency was mediated by this drinking norm. Analyses revealed that background variables, religious comfort, and perceptions of friends' frequency of use combined to account for 48% of the variance in the prediction of frequency of alcohol consumption. When controlling for this drinking norm, religious comfort contributed a small but significant additional 1.0% of variance ( $F$  for  $\Delta R^2 = (1, 314) = 5.00, p < .05$ ) to the prediction of frequency of alcohol consumption, indicating partial mediation.

The second model in Figure 3.2 shows the mediating role of friends' perceived drinking frequency on the relationship between religious comfort and alcohol-related consequences. The estimate for the indirect effect was Sobel's test =  $-3.65$  ( $p < .001$ ), which suggests that the association between religious comfort and problems resulting from drinking was mediated by this drinking norm. Analyses revealed that background variables, religious comfort, and perceptions of friends' drinking frequency combined to account for 34% of the variance in the prediction of alcohol-related problems. When controlling for this drinking norm, religious comfort contributed an additional 1.1% of variance ( $F$  for  $\Delta R^2 = (1, 314) = 5.265, p < .05$ ) to the prediction of alcohol-related consequences, again indicating partial mediation of the relationship between religious comfort and alcohol-related problems by perceptions of friends' drinking frequency.

In summary, perceptions of friends' drinking frequency fully mediated the relationships between religious commitment and quantity of alcohol consumption and between religious commitment and duration of alcohol use. Additionally, perceptions of friends' drinking frequency partially mediated the relationships between religious commitment and frequency of alcohol use, between religious commitment and alcohol-related consequences, between religious comfort and frequency of alcohol use, and between religious comfort and alcohol-related consequences.

#### *The Mediating Role of Close Friends' Quantity of Alcohol Use*

As illustrated in Figure 3.3, drinking norms for friends' quantity of alcohol consumption exhibited a pattern of mediation similar to drinking norms for friends' drinking frequency. Specifically, friends' perceived quantity of alcohol use fully mediated the relationships between religious commitment and quantity of alcohol use and between religious commitment and duration of alcohol use. Further, drinking norms for friends' quantity of alcohol consumption partially mediated the relationships between religious commitment and frequency of alcohol use and between religious commitment and alcohol-related consequences. The first model in Figure 3.3 depicts the mediating role of perceived friends' drinking quantity on the relationship between religious commitment and frequency of alcohol use. The estimate for the indirect effect was Sobel's test = -6.38 ( $p < .001$ ) which suggests that the association between religious commitment and alcohol use frequency was mediated by this drinking norm. Analyses revealed that background variables, perceptions of friends' quantity of use, and religious commitment combined to account for 45% of the variance in the prediction of frequency of alcohol consumption. When controlling for this drinking norm, religious commitment contributed an additional 4.8% of variance ( $F$  for  $\Delta R^2 = (1, 312) = 27.58, p < .001$ ) to the prediction of alcohol consumption, indicating partial mediation.

The second model in Figure 3.3 shows the mediating role of friends' perceived alcohol use quantity on the relationship between religious commitment and quantity of alcohol consumption. The estimate for the indirect effect was Sobel's test = -4.55 ( $p < .001$ ), which suggests that the association between religiousness and alcohol use quantity was mediated by this drinking norm. Analyses revealed that background variables, religious commitment, and perceptions of friends' drinking quantity combined to account for 41% of the variance in the prediction of quantity of alcohol consumption. When controlling for this drinking norm,

religious commitment contributed only an additional 0.4% of variance ( $F$  for  $\Delta R^2 = (1, 294) = 1.98, p > .05$ ) to the prediction of alcohol use quantity, indicating full mediation.

The third model shown in Figure 3.3 depicts the mediating role of friend's quantity of alcohol use on the relationship between religious commitment and duration of consumption. The estimate for the indirect effect was Sobel's test = -3.60 ( $p < .001$ ), which suggests that the association between religiousness and duration of alcohol use was mediated by this drinking norm. Analyses revealed that background variables, religious commitment, and perceptions of friends' quantity of consumption combined to account for 24% of the variance in the prediction of duration of alcohol consumption. When controlling for this drinking norm, religious commitment contributed only an additional 0.6% of variance ( $F$  for  $\Delta R^2 = (1, 291) = 2.21, p > .05$ ) to the prediction of alcohol use duration, indicating full mediation. Finally, the fourth model in Figure 3.3 shows the mediating role of friends' quantity of consumption on the relationship between religious commitment and alcohol-related consequences. The estimate for the indirect effect was Sobel's test = -4.86 ( $p < .001$ ), which suggests mediation. Analyses revealed that background variables, religious commitment, and this drinking norm combined to account for 32% of the variance in the prediction of alcohol-related problems. When controlling for perceptions of friends' quantity of alcohol use, religious commitment contributed an additional 1.4% of variance ( $F$  for  $\Delta R^2 = (1, 312) = 6.65, p < .05$ ) to the prediction of alcohol-related consequences, indicating partial mediation.

In addition to these analyses, we also investigated the mediating role of friends' perceived quantity of alcohol use on the relationships between religious comfort and frequency of alcohol use and between religious comfort and alcohol-related consequences. As can be seen in Figure 6, drinking norms for friends' quantity of alcohol consumption partially mediated the relationships between religious comfort and frequency of alcohol use and between religious comfort and alcohol-related problems. As before, alcohol use quantity and duration of alcohol consumption were omitted as dependent variables because religious comfort did not predict these outcomes beyond the effects of the background variables. The first model in Figure 3.4 depicts the mediating role of friends' perceived quantity of consumption on the relationship between religious comfort and frequency of alcohol use. The estimate for the indirect effect was Sobel's test = -4.04 ( $p < .001$ ) indicating that the association between religious comfort and alcohol use frequency was mediated by this drinking norm. Analyses revealed that background variables,

religious comfort, and perceptions of friends' quantity of consumption combined to account for 42% of the variance in the prediction of frequency of alcohol consumption. When controlling for this drinking norm, religious comfort contributed a small but significant additional 1.6% of variance ( $F$  for  $\Delta R^2 = (1, 313) = 8.71, p < .01$ ) to the prediction of alcohol consumption, indicating partial mediation of the relationship between religious comfort and alcohol use frequency by perceptions of friends' quantity of alcohol consumption.

The second model in Figure 3.4 shows the mediating role of friends' perceived quantity of drinking on the relationship between religious comfort and alcohol-related consequences. The estimate for the indirect effect was Sobel's test = -3.69 ( $p < .001$ ), which suggests that the association between religious comfort and problems resulting from drinking was mediated by this drinking norm. Analyses revealed that background variables, religious comfort, and perceptions of friends' drinking frequency combined to account for 33% of the variance in the prediction of alcohol-related problems. When controlling for this drinking norm, religious comfort contributed only an additional 1.7% of variance ( $F$  for  $\Delta R^2 = (1, 313) = 7.85, p < .01$ ) to the prediction of alcohol-related consequences, again indicating partial mediation.

In summary, friends' perceived drinking quantity fully mediated the relationships between religious commitment and quantity of alcohol consumption and between religious commitment and duration of alcohol use. Additionally, perceptions of friends' drinking quantity partially mediated the relationships between religious commitment and frequency of alcohol use, between religious commitment and alcohol-related consequences, between religious comfort and frequency of alcohol use, and between religious comfort and alcohol-related consequences.

#### *The Mediating Role of the Average Person's Quantity of Alcohol Use*

While religious commitment, perceptions of the average person's quantity of consumption, and alcohol outcomes met the initial conditions for mediation testing, religious commitment was not significantly associated with the mediating variable after accounting for the background variables (partial correlation = -.094,  $p = .10$ ). As such, analyses were not conducted to determine the mediating role of the average person's quantity of consumption drinking norm on the relationships between religious commitment and alcohol outcomes.

Table 3.1

Religiousness Predicting Alcohol Use Frequency

Step & Measure	R <sup>2</sup>	ΔR <sup>2</sup>	F for Δ in R <sup>2</sup>	df	Final Beta
Dependent Variable: Alcohol Use Frequency					
Step 1: Background Variables	.138***	.152***	11.250	5,314	
Step 2: Religious Commitment Religious Comfort	.338***	.186***	43.89	2,312	-.577*** -.176*
Step 3: Religious Importance	.338	.00	.164	1, 311	.034

Note. \* p<.05, \*\* p<.01. \*\*\*p<.001.

Table 3.2

## Correlations between Background Variables and Study Variables

Measure	Age	Gender <sup>a</sup>	Greek Membership <sup>b</sup>	Ethnic Background <sup>c</sup>	Social Desirability
Religious Commitment	-.014	.200**	.004	.113*	.084
Religious Comfort	-.038	.230**	-.057	.136*	.133*
Religious Strain	.022	-.104	.097	.029	-.129*
Close Friends' Frequency	.103	-.113*	.244**	-.057	-.096
Close Friends' Quantity	.020	-.280**	.181**	-.082	-.086
Average Student Frequency	.166**	.024	-.146**	.151**	-.010
Average Student Quantity	.077	-.249**	-.179**	.074	-.052
Fraternity Member Frequency	.040	.090	-.154**	.014	.004
Fraternity Member Quantity	.012	-.190**	.003	-.071	.022
Sorority Member Frequency	.068	.065	-.136*	.035	.064
Sorority Member Quantity	.049	-.156**	-.156**	.015	.010
Average Person Frequency	.241**	.101	-.062	.097	-.023
Average Person Quantity	.082	-.215**	-.047	.020	-.086
Frequency of Alcohol Use	.084	-.139*	.272**	-.125*	-.131*
Quantity of Alcohol Use	-.013	-.317**	.172**	-.026	-.112*
Duration of Alcohol Use	.096	-.116*	.205**	-.081	-.142*
DrInC Total Score	.075	-.142*	.141*	-.127*	-.203**

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

<sup>a</sup>= Positive correlations indicate associations with females; <sup>b</sup>= Positive correlations indicate associations with Greek membership;

<sup>c</sup>= Positive correlations indicate associations with non-Caucasians

Table 3.3

Religiousness and Alcohol Use Outcomes

Measure	RCI Total Score	Religious Comfort	Religious Strain
Frequency	-.477**	-.262**	.086
Quantity	-.363**	-.186**	.037
Duration	-.288**	-.128*	.061
DRINC Total Scale	-.367**	-.271**	.170**

Note. \* p<.05, \*\* p<.01.



Table 3.4

## Religiosity and Descriptive Drinking Norms

Measure	RCI Total Score	Religious Comfort	Religious Strain
Close Friends' Frequency	-.462**	-.234**	.101
Close Friends' Quantity	-.475**	-.236**	.070
Average Student Frequency	.036	.023	-.035
Average Student Quantity	-.068	-.020	.080
Fraternity Member Frequency	-.023	-.061	.042
Fraternity Member Quantity	-.098	-.075	.025
Sorority Member Frequency	-.011	.049	.014
Sorority Member Quantity	-.082	-.021	.043
Average Person Frequency	.016	.033	-.014
Average Person Quantity	-.135*	-.023	.038

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

Table 3.5

## Descriptive Drinking Norms and Alcohol Use Outcomes

Measure	Frequency	Quantity	Duration	DRINC Total Scale
Close Friends Frequency	.668**	.514**	.479**	.561**
Close Friends Quantity	.606**	.616**	.478**	.546**
Average Student Frequency	-.131*	-.147**	-.107	-.046
Average Student Quantity	.083	.166**	.018	.108*
Fraternity Member Frequency	-.066	-.141*	-.116*	-.032
Fraternity Member Quantity	.183**	.272**	.100	.202**
Sorority Member Frequency	-.103	-.125**	-.119*	-.029
Sorority Member Quantity	.060	.161**	-.013	.074
Average Person Frequency	-.088	-.123*	.058	-.038
Average Person Quantity	.209**	.312**	.170**	.235**

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

## Figure Captions

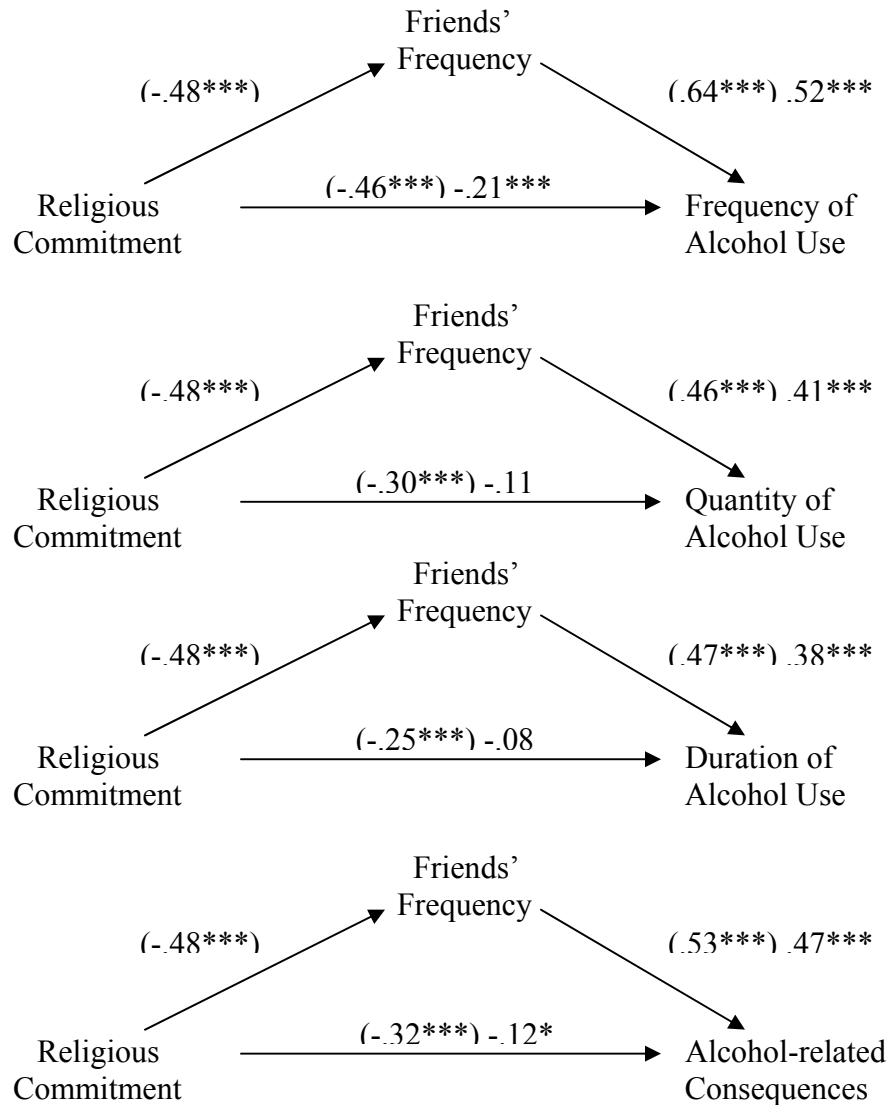
Figure 3.1. The mediating role of perceptions of close friends' frequency of consumption in the relationship between religious commitment and alcohol use and between religious commitment and alcohol-related consequences.

Figure 3.2. The mediating role of perceptions of close friends' frequency of consumption in the relationship between religious comfort and alcohol use and between religious comfort and alcohol-related consequences.

Figure 3.3. The mediating role of perceptions of close friends' quantity of consumption in the relationship between religious commitment and alcohol use and between religious commitment and alcohol-related consequences.

Figure 3.4. The mediating role of perceptions of close friends' quantity of consumption in the relationship between religious comfort and alcohol use and between religious comfort and alcohol-related consequences.

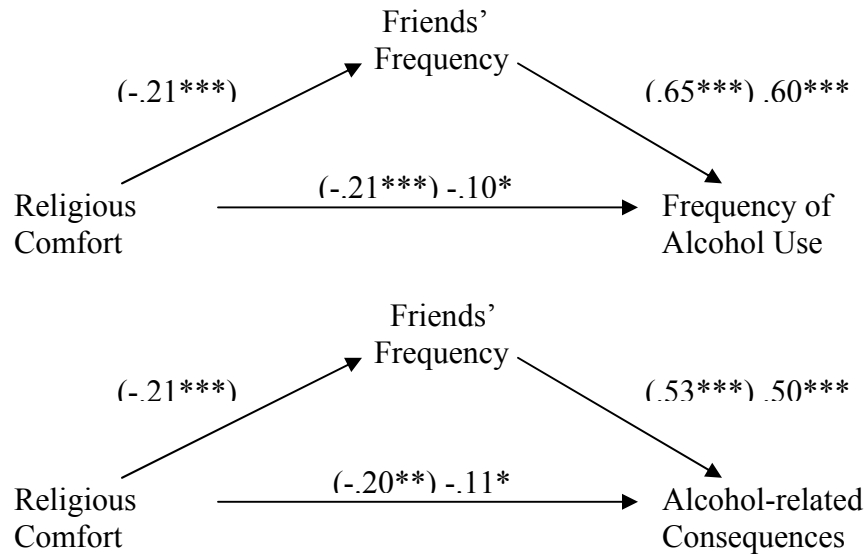
Figure 3.1



Note. The numbers in parentheses are partial correlations indicating the unique contribution of the independent and mediator variables when the variance associated with the background variables has been removed. The numbers outside parentheses are standardized Beta coefficients in the model with alcohol use or alcohol-related problems as the dependent variable, perceptions of close friends' frequency of consumption as the mediating variable, and religious commitment as the independent variable.

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

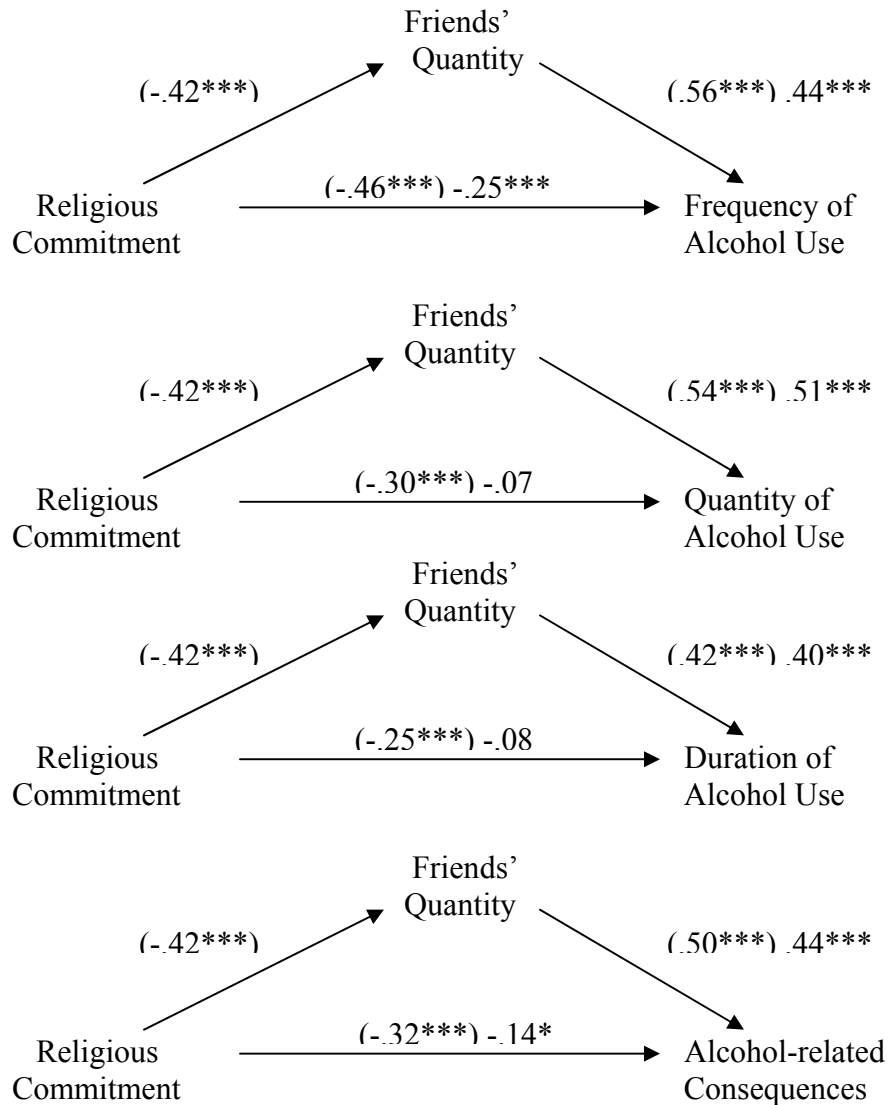
Figure 3.2



Note. The numbers in parentheses are partial correlations indicating the unique contribution of the independent and mediator variables when the variance associated with the background variables has been removed. The numbers outside parentheses are standardized Beta coefficients in the model with alcohol use or alcohol-related problems as the dependent variable, perceptions of close friends' frequency of consumption as the mediating variable, and religious comfort as the independent variable.

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

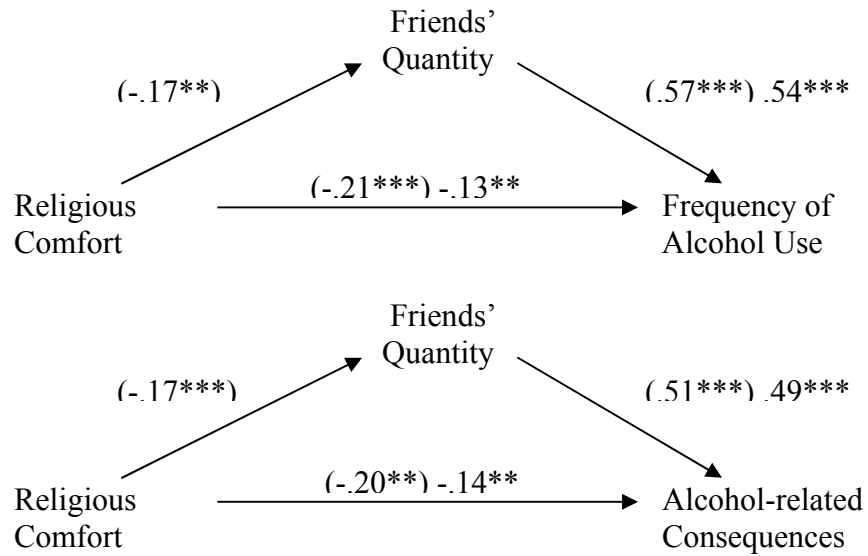
Figure 3.3



Note. The numbers in parentheses are partial correlations indicating the unique contribution of the independent and mediator variables when the variance associated with the background variables has been removed. The numbers outside parentheses are standardized Beta coefficients in the model with alcohol use or alcohol-related problems as the dependent variable, perceptions of close friends' quantity of consumption as the mediating variable, and religious commitment as the independent variable.

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

Figure 3.4



Note. The numbers in parentheses are partial correlations indicating the unique contribution of the independent and mediator variables when the variance associated with the background variables has been removed. The numbers outside parentheses are standardized Beta coefficients in the model with alcohol use or alcohol-related problems as the dependent variable, perceptions of close friends' quantity of consumption as the mediating variable, and religious comfort as the independent variable.

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

## Chapter Four

### Discussion

#### *General Discussion*

Alcohol use in young adults involves high levels of consumption as well as significant problems. Given the importance of these issues, researchers have investigated a variety of factors related to alcohol use including religiousness. Few studies, however, have included multiple measures of religiousness or investigated simultaneously several important dimensions of alcohol use and alcohol-related behaviors. In this study, we used multiple measures of religiousness and examined the role of descriptive drinking norms in the relationship between religiousness and alcohol use.

As predicted, religiousness, as measured by religious commitment and religious comfort, was inversely associated with alcohol use and alcohol-related consequences. Religiousness was related to less frequent alcohol consumption, fewer drinks consumed, and less time spent drinking. Additionally, religiousness was associated with fewer problems related to alcohol consumption. That is, individuals who reported a greater sense of commitment to their religious beliefs, application of their beliefs to their daily living, or more positive religious experiences also endorsed lower levels of alcohol consumption and alcohol-related problems than less religious counterparts. These findings are consistent with other studies demonstrating an inverse relationship between religiousness and alcohol use (Bahr et al., 1998; Donahue & Benson, 1995; Koenig et al., 2001) and contribute to a growing body of literature linking religiousness and lower levels of alcohol use.

It should be noted that many studies have investigated associations between “positive” aspects of religiousness (e.g., religious commitment, importance of religion) and alcohol use (Bahr et al., 1998; Mason & Windle, 2001). In order to expand understanding of the role of religiousness in alcohol consumption, the present study also included a measure of “negative” religiousness. Specifically, we explored the associations between negative religious experiences or religious strain and alcohol outcomes. While religious strain was not significantly associated with alcohol consumption, religious strain was linked to alcohol-related problems. Specifically, individuals who endorsed negative religious experiences (e.g., disagreement with friends or family about religious issues, feeling lonely or different because of one’s beliefs) reported more consequences related to their drinking. These drinking consequences cannot be attributed to



greater levels of alcohol consumption because religious strain was not associated with alcohol use outcomes. Given the cross-sectional nature of the present study, however, we cannot infer a causal direction between religious strain and alcohol-related problems. Future studies using longitudinal methodologies are needed to replicate this finding and determine the temporal direction of the association. It is possible, for example, that religious strain is tapping a general sense of discord or dissatisfaction with life. In this case, the association between religious strain and alcohol-related consequences may represent a relationship between two indicators of distress rather than the specific influence of religiousness.

The present study also examined the associations between religiousness and descriptive drinking norms. While previous studies have linked religiousness with attitudes (Francis, 1997), the relationship between religiousness and perceptions of alcohol use by others as indexed by drinking norms remained unexplored until now. The present study found that religiousness was not associated with descriptive drinking norms with one major exception. Specifically, religious commitment and comfort were significantly associated with perceptions of close friend's drinking frequency and quantity. Young adults higher in religiousness perceived their close friends to drink less frequently and in lower quantities than less religious counterparts. Religious commitment was also associated with perceptions for quantity of consumption by same-age peers. However, the strength of this association was relatively weak and significant only at the  $p < .05$  level. This relationship and the other significant associations between religiousness and descriptive drinking norms require replication.

It may be that religiousness, as indexed by measures of religious commitment and comfort, influences drinking norms through selection of friends. Religious young adults may establish friendships with peers possessing similar beliefs and exhibiting similar alcohol use patterns (Bahr et al., 1998). If religious young adults are more likely to associate with friends with similar religious beliefs (Sutherland & Shepherd, 2001), then the association between religiousness and perceptions of friends' drinking behavior is likely due to actual differences in alcohol consumption rather than the influence of religiousness on perceptions about drinking. It is also possible that religiousness is associated with drinking norms for close friends because of misperceptions and not due to lower levels of alcohol use in friends of religious young adults. That is, personal beliefs about alcohol use (e.g., approval of moderate use, disapproval of binge drinking) and perceptions of others' approval of use (prescriptive drinking norms) may influence

perceptions of close friends' drinking behavior. As such, additional studies are needed to investigate religiousness, personal alcohol attitudes, prescriptive drinking norms, and descriptive drinking norms so that we can better understand the relationship between religiousness and descriptive drinking norms.

Considering the nonsignificant associations between religiousness and other descriptive drinking norms, it may be that religiousness influences personal choices about drinking, as evidenced by the association between religiousness and alcohol consumption discussed above, as well as perceptions of close friends' behavior but does not impact perceptions of drinking behaviors in the more general population. Perhaps alcohol consumption is so common that even religious young adults who typically consume less alcohol and associate with peers possessing similar beliefs (Burkett & Warren, 1987; Sutherland & Shepherd, 2001) are sufficiently exposed to alcohol consumption to report descriptive drinking norms similar to less religious counterparts. Future studies should investigate the association between religiousness and descriptive drinking norms on religious campuses and campuses where alcohol use is likely to be less common to explore this issue.

In addition to investigating the relationships between religiousness and alcohol use and between religiousness and descriptive drinking norms, the present study also examined the associations between descriptive drinking norms and alcohol use outcomes. Previous research has demonstrated that descriptive drinking norms for close friends were more strongly associated with consumption by the individual than perceptions of the more general population (e.g., typical student) (Baer et al., 1991). Based on social comparison and social impact theories, researchers have argued that more proximal groups such as close friends exert stronger influence on behavior than more distal groups (Lewis & Neighbors, 2004; Martens et al., 2006). We found that the strength and significance of the association between descriptive drinking norms and alcohol use depends on the drinking norms target. Perceptions of friends' drinking frequency and quantity were associated with frequency of use, quantity of consumption, duration of drinking, and alcohol-related consequences. Similarly, perceptions of same-age peers' quantity of alcohol use were related to alcohol consumption variables as well as alcohol-related problems. However, these relationships were not as strong as those for perceptions of close friends' drinking behavior. The consistency of the effect also appears to vary depending on the alcohol variable under consideration. Whereas frequency of drinking, duration of consumption, and alcohol-

related problems were associated only with specific drinking norms, quantity of consumption was significantly associated with every drinking norm.

Two issues regarding the relationship between drinking norms and alcohol use should be noted. First, the proximity of the drinking norm target appears to matter as it did in relation to religiousness. Specifically, perceptions of one's close friends' drinking behavior exhibited the strongest and most consistent relationships with personal alcohol consumption. This is not surprising as young adults likely spend more time with close friends and these friends likely exert greater influence than the general population (Prentice & Miller, 2002). Second, many of the prior studies demonstrating a relationship between drinking norms and alcohol used cross-sectional designs. As such, we cannot determine the direction of the relationship. As interest in the role of drinking norms in alcohol use has increased, more researchers have implemented longitudinal designs to develop and evaluate intervention programs focused on drinking norms (Marks, Graham, & Hansen, 1992; Werner et al., 1996). From these studies, we know that drinking norms have been shown to influence subsequent drinking behavior. In fact, Marks et al. (1992) demonstrated that the association between descriptive drinking norms and subsequent drinking was stronger than the association between drinking behavior and subsequent descriptive drinking norms. In the present study, we have focused on the influence of drinking norms on alcohol consumption within the mediational model. However, this relationship may be better understood as alcohol consumption influencing one's perceptions of others' drinking behavior. In reality, this is likely a bidirectional relationship where perceptions of others' drinking influence one's alcohol consumption and vice versa (Marks et al., 1992). Additional longitudinal studies are required to elucidate the relative influences these constructs have on each other.

Another major finding of the present study was that the associations between religiousness and alcohol use outcomes appear to be mediated by drinking norms for one's close friends. That is, religiousness impacts alcohol consumption and alcohol-related problems *through* the influence of perceptions of close friends' drinking frequency and quantity of consumption. Our data suggest that higher levels of religious commitment and comfort are associated with lower levels of friends' perceived drinking which, in turn, are associated with alcohol consumption and alcohol-related consequences.

It is beyond the scope of the present study to determine precisely how religiousness influences descriptive drinking norms to impact alcohol use outcomes. However, it appears clear

that perceptions of close friends' drinking explains, at least in part, why religiousness is associated with alcohol use. Young adults who are high in religiousness tend to perceive lower levels of drinking by their close friends and these perceptions are then associated with less alcohol use and fewer alcohol-related problems. While this finding is important, it also raises other questions warranting further investigation. First, it is not clear that the influence of religiousness can be explained entirely by descriptive norms for one's close friends. For example, religious commitment accounted for a small but significant increase in variance in predicting frequency of alcohol use beyond the variance accounted for by perceptions of close friends' drinking frequency and background variables. This finding aligns with previous work by Burkett (1993) but also suggests that the influence of religiousness on alcohol use outcomes is not solely due to perceptions of friends' drinking behavior. Second, it is unclear whether more religious young adults actually associate with peers who consume alcohol less frequently and in lesser quantities or whether these religious young adults misperceive lower levels of consumption in their friends. Additional studies—including those obtaining actual drinking reports from friends—are needed to determine the mechanisms by which religiousness influences perceptions of friends' alcohol consumption. We do know, however, that religious commitment and comfort were consistently related to alcohol use outcomes and that these relationships were at least partially explained by descriptive drinking norms for close friends.

Prior to integrating the present findings into prevention and intervention programs, these results must be replicated in subsequent studies. This is particularly important for the associations demonstrated between religiousness and descriptive drinking norms as these relationships have not been explored previously in the current literature. Future research must also examine the mechanisms of the association between religiousness and descriptive drinking norms for one's close friends. Specifically, investigators should evaluate whether friends of religious young adults actually consume alcohol less frequently and in lesser quantities or religious young adults simply perceive lower levels of alcohol use. Additionally, future research must address the relationship between religious strain and alcohol-related consequences. Again, the temporal nature of the relationship must be explored. Perhaps young adults experiencing religious strain consume alcohol to deal with these negative experiences. While they may not consume alcohol at higher levels than counterparts, they may be more likely to experience negative consequences as a result of their drinking (Brechtling, Salsman, Collier, & Carlson,

2006). It could also be that young adults may be drinking alcohol and experiencing alcohol-related problems, which in turn, lead to feelings of religious discord for some individuals. If our present findings are replicated in further studies, the Social Developmental Model for Adolescent-Young Adult Alcohol Use should be modified. Specifically, the influence of descriptive drinking norms on the relationship between religiousness and alcohol use appears to operate within a specific social context. That is, given that the specific target group of close friends alone mediated the religiousness-alcohol use relationship, descriptive drinking norms may be more appropriately represented under the construct of social context rather than person variables and resources.

### *Study Limitations*

The present findings should also be considered in light of several limitations of the study. First, the cross-sectional nature of the study design precludes conclusions regarding causality. Longitudinal studies are needed in order to elucidate the temporal manner in which religiousness, drinking norms, and alcohol use relate to one another. Second, the gender distribution of the sample is also a potential concern. Given that one of the most persistent findings in the scientific study of religion is that females exhibit greater religiousness and religious participation than males (Brown et al., 2001; Donahue and Benson, 1995; Gallup & Bezilla, 1992), this over-representation of females likely does not compromise the external validity of the present findings. However, if future studies examining these constructs included an increased proportion of males, it would instill greater confidence in the present findings. Third, the ethnic diversity of the sample was limited. Replicating this study with larger numbers of ethnic minority participants would enable exploration of whether the present findings are invariant across ethnic groups. Fourth, the educational status of the participants may limit the findings to this particular cohort of young adults. It would be important to evaluate whether these findings hold for young adults not participating in higher education. Finally, this study relied on responses to self-report questionnaires. However, much research has demonstrated that using self-report study designs yields reliable and valid substance use data (Miller et al., 1998) in young adults (Harrison & Hughes, 1997).

### *Summary and Future Directions*

In spite of these limitations, this study makes important contributions to our understanding of how religiousness may exert its influence on the drinking behavior of young

adults. First, the previously demonstrated relationship between religiousness and alcohol use received additional empirical support in young adults from the present sample. Second, the role of negative religious experiences was explored. Future studies in this area should include such aspects of religiousness to better understand the complex influence of religiousness on alcohol use. Third, this study expanded the current literature by exploring the associations between several aspects of religiousness and descriptive drinking norms. Fourth, the present findings highlighted the importance of examining the role of specific descriptive drinking norms and refraining from general conclusions about drinking norms when considering their impact on alcohol use. Fifth, descriptive drinking norms for close friends emerged as mediators of the relationships between religiousness and alcohol use outcomes. That is, the relationship between religiousness (i.e., religious commitment and comfort) and alcohol use can be at least partially understood through the influence of drinking norms for close friends. Finally, this study provided several empirical tests of the hypothesized relationships derived from the Social Developmental Model for Adolescent-Young Adult Alcohol Use. While findings supported several key relationships, other findings suggested modifications to this theoretical model may be in order. Specifically, upon replication, the influence of descriptive drinking norms may be better represented under the construct of social context rather than person variables and resources. In summary, this study contributed to the current literature by examining multiple aspects of religiousness and alcohol use, exploring the role of descriptive drinking norms, and empirically testing the Social Developmental Model for Adolescent-Young Adult Alcohol Use.

Appendix A

Measures

**Demographic Information**

1. **What is your gender?**  
Male  Female
  
2. **What is your age? \_\_\_\_\_**
  
3. **What ethnic group do you most identify with?**  
 African American  
 Asian American  
 Caucasian  
 Hispanic/Latino  
 Native American  
 Other: \_\_\_\_\_
  
4. **Where do you live this semester?**  
 Dorm  
 Apartment/House  
 Greek housing  
 With parents  
 Other
  
5. **Are you a member of a Greek organization?**  
 Yes  
 No
  
6. **How many years of education have you completed?**  
 High school diploma/GED  
 1 year college/vocational school  
 2 year college/vocational school  
 3 year college/vocational school  
 College graduate

## RCI-10

**Please respond to each of the items using the following scale:**

- 1** = not at all true of me
- 2** = somewhat true of me
- 3** = moderately true of me
- 4** = mostly true of me
- 5** = totally true of me

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
I often read books and magazines about my faith.	○	○	○	○	○
I make financial contributions to my religious organization.	○	○	○	○	○
I spend time trying to grow in understanding of my faith.	○	○	○	○	○
Religion is especially important to me because it answers many questions about the meaning of life.	○	○	○	○	○
My religious beliefs lie behind my whole approach to life.	○	○	○	○	○
I enjoy spending time with others of my religious affiliation.	○	○	○	○	○
Religious beliefs influence all my dealings in life.	○	○	○	○	○
It is important to me to spend periods of time in private religious thought and reflection.	○	○	○	○	○
I enjoy working in the activities of my religious organization.	○	○	○	○	○
I keep well informed about my local religious group and have some influence in its decisions.	○	○	○	○	○



## Religious Comfort and Strain

To what extent are you currently having each of these experiences?

0 —————→ 3  
not at all                      extremely

	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Feeling that God has forgiven your sins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trusting God to protect and care for you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling that God is close to you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling loved by God	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good memories of past experiences with religion or religious people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling like part of a religious or spiritual community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling comforted by your faith	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling that God is far away	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling abandoned by God	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling that your faith is weak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty trusting God	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty believing God exists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Belief that you have committed a sin too big to be forgiven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of evil or of the devil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Belief that sin has caused your problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of God's punishment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bad memories of past experiences with religion or religious people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disagreement with a family member or friend about religious issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disagreement with something that your religion or church teaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling lonely or different from others because of your beliefs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Additional Religiousness Items

**1. What is your current religious preference?**

- Buddhism
- Catholicism
- Hinduism
- Islam
- Judaism
- Protestantism, which specific denomination: \_\_\_\_\_
- Other, please specify: \_\_\_\_\_
- None

**2. How important is this religion to you?**

- Not at all
- A little
- Moderately
- Quite a bit
- Extremely

**3. To what extent do you consider yourself a religious person?**

- Very Religious
- Moderately Religious
- Slightly Religious
- Not at all Religious

**MC-C**

**Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to your personality.**

	<b>True</b>	<b>False</b>
It is sometimes hard for me to go on with my work if I am not encouraged.	O	O
I sometimes feel resentful when I don't get my way.	O	O
On a few occasions, I have given up doing something because I thought too little of my ability.	O	O
There have been times when I felt like rebelling against people in authority even though I knew they were right.	O	O
No matter who I'm talking to, I'm always a good listener.	O	O
There have been occasions when I took advantage of someone.	O	O
I'm always willing to admit it when I make a mistake.	O	O
I sometimes try to get even rather than forgive and forget.	O	O
I am always courteous, even to people who are disagreeable.	O	O
I have never been irked when people expressed ideas very different from my own.	O	O
There have been times when I was quite jealous of the good fortune of others.	O	O
I am sometimes irritated by people who ask favors of me.	O	O
I have never deliberately said something that hurt someone's feelings.	O	O

## Alcohol Consumption

For the *past month*, please fill in a number for each day of the week indicating the *typical number of drinks* you usually consume on that day, and the *typical number of hours* you usually drink on that day.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of drinks							
Number of hours							

**In the last year, how often did you drink alcohol on the average?**

- I didn't drink any alcohol
- Once
- Once every 6 months
- Once every 3 months
- Once every 2 months
- Once a month
- Twice a month
- Three times a month
- Once a week
- Twice a week
- Three times a week
- Four times a week
- Five times a week
- Six times a week
- Once a day
- More than once a day

## Descriptive Drinking Norms

### Drinking Norms Rating Form (DNRF)

Instructions	How Often They Drink	How Much They Typically Drink
We are interested in your estimates of <i>how often</i> and <i>how much</i> different types of people drink. In each of the following situations, please enter a response for A (how often they drink) and B (how much they drink).	<ol style="list-style-type: none"> <li>1. Less than once a month</li> <li>2. About once a month</li> <li>3. 2 or 3 times a month</li> <li>4. Once or twice a week</li> <li>5. 3 or 4 times a week</li> <li>6. Nearly every day</li> <li>7. Once a day</li> </ol>	<ol style="list-style-type: none"> <li>1. 0 drinks</li> <li>2. 1-2 drinks</li> <li>3. 3-4 drinks</li> <li>4. 5-6 drinks</li> <li>6. 7-8 drinks</li> <li>6. More than 8 drinks</li> </ol>
Average student on your campus		
Average member of a fraternity		
Average member of a sorority		
Average person your age		
Your close friends		

## Alcohol-Related Consequences

### Drinker Inventory of Consequences (DrInC)

**There are a number of events that drinkers sometimes experience. Read each item carefully and fill in the bubble that indicates whether this has ever happened to you (Yes/No). Then also indicate how often each one has happened to you DURING THE PAST YEAR by filling in the appropriate bubble (Never, Once or a few times, etc.). If an item does not apply to you, fill in “Never.”**

- 0 = Never
- 1 = Once or a few times
- 2 = Once or twice a week
- 3 = Daily or almost every day

	Has this ever happened to you?		During the past year, how often has this happened to you?			
	No	Yes	0	1	2	3
I have had a hangover after drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt bad about myself because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have missed days of work or school because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family or friends have worried or complained about my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have enjoyed the taste of beer, wine, or liquor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The quality of my work has suffered because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My ability to be a good parent has been harmed by my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After drinking, I have had trouble sleeping, staying asleep, or nightmares	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have driven a motor vehicle after having three or more drinks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My drinking has caused me to use drugs more	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been sick and vomited after drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been unhappy because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because of my drinking, I have not eaten properly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have failed to do what is expected of me because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	<b>No</b>	<b>Yes</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Drinking has helped me relax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have felt guilty or ashamed because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While drinking, I have said or done embarrassing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When drinking, my personality has changed for the worse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have taken foolish risks when I have been drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have gotten into trouble because of drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While drinking, I have said harsh or cruel things to someone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While drinking, I have done impulsive things that I regretted later	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have gotten into a physical fight while drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My physical health has been harmed due to my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking has helped me to have a more positive outlook on life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have had money problems because of drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My marriage or love relationship has been harmed by my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have smoked more when I am drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My physical appearance has been harmed by my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family has been hurt by my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A friendship or close relationship has been damaged by my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been overweight because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My sex life has sugared because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have lost interest in activities and hobbies because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When drinking, my social life has been more enjoyable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My spiritual or moral life has been harmed by my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because of my drinking, I have not had the kind of life that I want	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My drinking has gotten in the way of my growth as a person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My drinking has damaged my social life, popularity, or reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	<b>No</b>	<b>Yes</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
I have spent too much or lost a lot of money because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been arrested for driving under the influence of alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have had trouble with the law (other than driving while intoxicated) because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have lost a marriage or close love relationship because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been suspended/fired from or left a job or school because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I drank alcohol normally, without any problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have lost a friend because of my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have had an accident while drinking or intoxicated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While drinking or intoxicated, I have been physically hurt, injured, or burned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
While drinking or intoxicated, I have injured someone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have broken things or damaged property while drinking or intoxicated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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**Clinical Excellence Award**, Department of Psychology, University of Kentucky, Lexington, Kentucky, 2006

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**Research Society on Alcoholism Student Merit Award**, 2004, 2005, & 2006

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**Kentucky Opportunity Fellowship**, University of Kentucky, Lexington, Kentucky, 2002 to 2003

**Quality Achievement Award**, University of Kentucky, Lexington, Kentucky, 2001 to 2005

**Research Challenge Trust Fund Fellowship**, University of Kentucky, Lexington, Kentucky, 2001 to 2002

**Sigma Xi Senior Research Award**, Hope College, Holland, Michigan, 1999

**Psi Chi, National Honors Society in Psychology**, 1999

**Graduated Cum Laude**, Hope College, Holland, Michigan, 1999

**Sigma Delta Pi, National Honors Society in Spanish**, 1998 to 1999

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Brechting, E.H., & Giancola, P.R. (in press). Religious coping reduces drug use in adolescent boys: A 2-year longitudinal study. *Journal of Child and Adolescent Substance Abuse*.

Brown, T.L., Salsman, J.M., Brechting, E.H., & Carlson, C.R. (in press). Religiousness, spirituality, and social support: How are they related to underage drinking among college students? *Journal of Child and Adolescent Substance Use*.

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### **ORAL PRESENTATIONS**

Brechting, E.H., Brown, T.L., Salsman, J.M., & Carlson, C.R. (2005). Religiousness, coping, and alcohol use in college students. Paper presented at the conference of Addiction and Spirituality: Scientific, Theological, & Clinical Perspectives, Terre Haute, IN.

Salsman, J. M., Brown, T.L., Brechting, E.H., & Carlson, C.R. (2003). Beyond positive psychology: Linking spirituality, religiosity, mental health, and alcohol. Paper presented at the annual meeting of the Southeastern Psychological Association, New Orleans, LA

## **POSTER PRESENTATIONS**

Brechting, E.H., Salsman, J.M., Collier, B., & Carlson, C.R. (2006). Moving forward: A better understanding of the relationship between religiousness and alcohol problems. Poster presented at the annual meeting of the Research Society on Alcoholism, Baltimore, MD.

Brechting, E.H., Pavlik, E., & Andrykowski, M. (2006). Factors associated with psychological responses to abnormal ovarian cancer screening test. Poster presented at the annual meeting of the Society of Behavioral Medicine, San Francisco, CA.

Brechting, E.H., Jacobsen, P., & Andrykowski, M.A. (2005) Personality and cognitive functioning: Impeding performance? Poster presented at the annual meeting of the Society of Behavioral Medicine, Boston MA.

Brechting, E.H., Brown, T.L., Salsman, J.M., & Carlson, C.R. (2005). Religiousness and alcohol use: The impact of coping style. Poster presented at the annual meeting of the Research Society on Alcoholism, Santa Barbara, CA.

Brechting, E.H., Brown, T.L., Salsman, J.M., & Carlson, C.R. (2004). Failing to walk the talk: The role of spiritual beliefs and behaviors in predicting alcohol use. Poster presented at the annual meeting of the Research Society on Alcoholism, Vancouver, Canada.

Brechting, E.H., Jacobsen, P., & Andrykowski, M.A. (2004). Accept no substitutes: Self-report measures of cognitive functioning poorly related to objective indices. Poster presented at the annual meeting of the Society of Behavioral Medicine, Baltimore, MD.

Brechting, E.H., Brown, T.L., Salsman, J.M., & Carlson, C.R. (2003). Religiosity and alcohol use: Is the glass half full? Poster presented at the annual meeting of the Southeastern Psychological Association. New Orleans, LA

Brechting, E.H., & Giancola, P.R. (2003). Religious coping reduces drug and alcohol use in adolescent boys: 2-year longitudinal study. Poster presented at the annual meeting of the Research Society on Alcoholism, Ft. Lauderdale, FL.

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Hollebeck, E., Drake, C.L., Scofield, H., Roehrs, T.R., & Roth, T. (2001). Past-year opiate use and sleep problems in the general population. Poster presented at the annual meeting of the Associated Professional Sleep Societies, Chicago, IL.

## **RESEARCH POSITIONS**

**Project Coordinator, Spirituality & Religiosity Research Interest Group**, Psychology Department, University of Kentucky, Lexington, Kentucky, 2001 to present

**NIMH Research Trainee**, Department of Behavioral Science, University of Kentucky, Lexington, Kentucky, 2005 to 2006

**Research Assistant**, Department of Behavioral Science, University of Kentucky, Lexington, Kentucky, 2003 to 2006

**Department of Defense Predoctoral Trainee**, Department of Behavioral Science, University of Kentucky, Lexington, Kentucky 2003 to 2004

**Research Assistant**, Department of Psychology, University of Kentucky, Lexington, Kentucky, 2001 to 2003

**Research Assistant**, Henry Ford Sleep Disorders and Research Center, Detroit, Michigan, 1999 to 2001

**Research Assistant**, Department of Psychology, Hope College, Holland, Michigan, 1998 to 1999

**Research Assistant**, Department of Sociology, Hope College, Holland, Michigan, 1997

## **CLINICAL EXPERIENCES**

**Clinical Trainee**, Harris Psychological Services Center, University of Kentucky, Lexington, Kentucky, 2002 to 2006

**Group Leader**, Hope Center for Women, Lexington, Kentucky, 2004 to 2005

**Clinical Placement**, Harris Psychological Services Center, University of Kentucky, Lexington, Kentucky, 2003 to 2004

**Clinical Placement**, Department of Neurology, University of Kentucky, Lexington, Kentucky, 2002 to 2003

**Clinical Placement**, Lakeshore Clubhouse, Holland, Michigan, 1998

**Group Leader**, Young Life, Holland, Michigan, 1995 to 1999