THE IMPACT OF NORMATIVE BELIEFS, RELIGION,

AND PERSONALITY ON COLLEGE

DRINKING BEHAVIOR

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James R. Sliwinski Jr., B.A.

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Committee Members Approved:

_____

John M. Davis, Chair

_____

Alexander Nagurney

_____

Randall Osborne

Approved:

_____

J. Michael Willoughby
Dean of the Graduate College

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James R. Sliwinski Jr., B.A.

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SUPERVISING PROFESSOR: JOHN DAVIS

Despite efforts to decrease the high rates of alcohol consumption seen across many American college campuses, alcohol related problems continue to be an issue for several students ages 18-24. Past research has indicated that several factors may play a

role in influencing one's decision of whether or not to drink alcohol. Among these factors are normative beliefs, religion, and personality. Although we have learned much through past efforts, we are still unable to definitively answer the question of how can we reduce alcohol use behaviors on college campuses. The current study attempted to help add light to this issue through a regression analysis procedure that was used to determine what factors accounted for a unique proportion of the variance in alcohol use behaviors in a sample of 140 college undergraduates. Results indicated that personal beliefs, or one's own opinion on what qualifies as a correct action in a given situation, accounted for the largest proportion of the variance. Future research should attempt to clarify what factors go into shaping an individual's personal beliefs, as well as how this information can be used to lower drinking rates on American college campuses.

CHAPTER I

INTRODUCTION

Negative Consequences of Alcohol Use

For well over a decade, psychologists and communication experts alike have been concerned with the high rate of alcohol use and abuse among college students. However, despite efforts to reduce alcohol consumption on college campuses, overall rates of drinking and drunkenness remain high (Dunleavy, 2008). On average, nearly 83% of college students drink on a regular basis (Day-Cameron, Muse, Hauenstein, Simmons, & Correia, 2009), and just over 40% of all students report binge-drinking at least once a month. Perhaps even more alarming is research suggesting that over 30% of all college students meet the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) criteria for alcohol abuse (American Psychiatric Association [*DSM-IV-TR*], 2000), whereas 6% meet the criteria for alcohol dependence (Knight et al., 2002).

This high level of abuse can result in several negative consequences including accidental injury (Elek, Miller-Day, & Hecht, 2006; National Institute of Alcohol Abuse and Alcoholism, 1997), poor academic performance (Core Institute, 2003; Perkins, 2002; Presley, Meilman, & Cashin, 1996; Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998), impaired social maturity (Elek, et al., 2006; Substance Abuse and Mental

Health Services Administration [SAMHSA], 2001), memory loss (Dunleavy, 2008), unwanted and unprotected sexual intercourse, drunk driving, exacerbation of comorbid mental health problems, and mortality (Knight et al., 2002).

Alcohol abuse can also lead to significant financial burdens. Factors contributing to this problem include lost wages, theft, and detoxification treatment. As of 1998, the U. S. Department of Health and Human Services has reported that alcohol abuse costs the United States over $183,000,000 annually, with an estimated loss increase of 3.8% each year (United States Department of Health and Human Services, 2000).

Past research suggests that 18-24 year old individuals use alcohol more often than do persons belonging to other age groups (Chen, Dufour, & Yi, 2004/2005), and that people are also more vulnerable to developing alcohol disorders during this time period. Furthermore, it has also been found that college students belonging to this age-group drink alcohol more often and in larger quantities than do non-students of the same age (O'Malley & Johnston, 2002). The Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism (2002) has reported that a "culture of drinking" exist on college campuses, which explains the high levels of alcohol consumption among college students. Osberg et al. (2010) have also suggested that students enter college with the expectation that alcohol will be readily available to them during their college years.

The Impact of Normative Beliefs

With the above details in mind, it is clear that if we hope to lower alcohol consumption rates among college students, we must find a way to challenge the "culture of drinking" that is a mainstay at most college campuses. In an attempt to do so, many

colleges and universities have implemented anti-alcoholism ad campaigns that rely on normative data to reduce drinking rates among students (Dunleavy, 2008; Glassman, 2002; Raloff, 2003; Wechsler et al., 2002). The majority of these efforts have been based on findings indicating that college students have a strong tendency to overestimate the amount of alcohol consumed by their fellow students, which serves as the particular descriptive norm for this situation (Day-Cameron et al., 2009; Thombs, Ray-Tomasek, Osborn, & Olds, 2005). A descriptive norm can generally be defined as the behavior that is most frequently displayed by other people in a given situation.

There are several theoretical positions that support the idea that misperceived descriptive norms can lead to undesirable behaviors. Among these are social norms theory (Dunleavy; 2008), social learning theory (Bandura 1986), social comparison theory (Festinger, 1954), and problem behavior theory (Donovan, Jessor, & Jessor, 1983).

A growing number of efforts have also incorporated recent findings indicating that college students also tend to overestimate alcohol consumption rates that their fellow students deem socially appropriate (Borsari & Carey 2003; Larimer, Turner, Mallett, & Geisner, 2004, Park, Klein, Smith, & Martell, 2009). This facet serves as the injunctive norm, which can broadly be defined as the action, or actions, that the majority of people deem socially acceptable and morally correct for a given situation. The main theoretical position that supports the idea of including injunctive normative data into alcohol use prevention efforts is the theory of planned behavior. This theory states that the actions that one choose to engage in during a particular situation are based both on a combination of descriptive and injunctive normative beliefs, as well as perceived

behavioral control (PBC), or one's own ability to willingly choose to engage in, or refrain from, performing a given behavior (Azjen, 1991; Cialdini, Reno, & Kallgren, 1991; Dunleavy; 2008).

Regardless of the particular theory behind any of these prevention campaigns, their ultimate goal is to educate students on the discrepancy between their own perceptions of what their peers deem normal college drinking behaviors and attitudes and the actual behaviors and attitudes of other college students. Thus far, these prevention efforts have produced mixed results (Campo et al., 2003).

Defining Normative Beliefs

Reactions to the contradictory findings produced from normative behavior research have been varied, and range from Azjen's (1991) conclusion that personal factors play a greater role in actual behavior than do norm references, to Spark's and colleagues' conclusion that norms should be altogether removed from attitude-behavior analysis (Sparks, Shepherd, Wieringa, & Zimmermans, 1995). However, due to the large number of studies which have found normative beliefs to account for a significant proportion of the variance explained across a wide variety of behaviors, including aggressive behavior (Henry et al., 2000; Norman, Clark, & Walker, 2006), volunteering (Warburton & Terry, 2000), drug use (McMillian & Conner, 2003), physical exercise (Rhodes & Courneya, 2003), and safe sex practices (White, Terry, & Hogg, 1994), other researchers such as Smith and Louis (2008) and Larimer et al. (2004) have suggested that a more productive and reasonable approach would be to first reexamine the reasons why norm research on alcohol behavior has resulted in mixed findings up to this point,

and then to use this new knowledge to reconceptualize and then concretely define

normative behaviors as they pertain to college alcohol use.

One possible explanation for the lack of consistent findings across normative

studies on alcohol consumption may have something to do with a lack of consensus on

which norms we should be studying and how they should be defined. Dunleavy (2008)

has argued that this confusion is in part due to the fact that definitions of normative

behaviors and beliefs vary greatly depending on the particular normative theory that is

being utilized. For example, while social norms theory (SNT) argues for the existence

of a subjective normative belief, it has been criticized for its failure to consistently

differentiate between injunctive and descriptive normative beliefs (Campo et al., 2003;

Cook et al., 2003; Rimal & Real 2003). Although, other researchers have argued that

conceptualizations of the two concepts can be found in SNT literature (Dunleavy, 2008;

Perkins & Berkowitz, 1986). Furthermore, although a conceptualization of injunctive

norms may be found in past SNT research on alcohol, the conceptualization itself tends

to be fairly narrow, quite often relying on a measure of the perceived level of

permissiveness of campus drinking by one's peers (Dunleavy, 2008). This narrow

conceptualization fails to account for other factors that may influence a person's

conceptualization of what the "right" thing to do is, including family values, religious

and moral beliefs, and community laws and regulations. Additionally, the facets

covered by the injunctive norm become further narrowed when subjective norms are

defined as the amount of pressure people believe themselves to be under to perform a

given action (e.g. Smith & Louis, 2008). This raises the issue of whether or not

injunctive norms really are the beliefs and values of the community, or if they stem from

more individualized conceptions of what is right or wrong. Furthermore, even though some SNT theorists have incorporated measures of injunctive beliefs into their research, this does not change the fact that most anti-drinking SNT campaigns continue to focus the majority of their attention on descriptive norms (Dunleavy, 2008).

Despite the particular theory being used in normative research, ineffective and inconsistent defining of normative beliefs and behaviors can still be found. Thankfully, this has led to some researchers making clear attempts to point out exactly how they operationally defined the norms they examined in their particular study. For example, Larimer et al. (2004) included a well though-out and inclusive definition of injunctive norms in their study on college alcohol use. They defined injunctive norms as, "the behaviors and attitudes that are judged to be acceptable, expected, and correct within a given social system" (Larimer et al., 2004, pg. 204). This definition is highly appropriate when studying alcohol consumption, due to the fact that it allows for several different societal factors to come into the equation of what one must consider when deciding whether or not it is appropriate to drink alcohol, including moral and religious values and beliefs, laws, and customs. This definition is also in line with an earlier, and therefore, perhaps purer definition of injunctive norms proposed by Cialdini, Reno, and Kallgren (1990). Meanwhile, their definition of a descriptive norm, which they termed "actual behavior" (Larimer et al., 2004, pg. 204), is quite simple, although no less well defined.

What this particular emphasis on correctly defining these terms highlights, is the researchers' own frustration with the multitude of operational definitions being offered. For they, along with numerous other researchers, have noted how confusion and

opposing beliefs over the way in which norms have been operationally defined and assessed has hampered the advancement of the field (Borsari & Carey, 2003; Dunleavy, 2008; Larimer et al., 2004).

After running a meta-analysis of the literature of descriptive and injunctive normative beliefs and their effect on college drinking, Borsari and Carey (2003) have perhaps offered the best and most comprehensive definitions of injunctive and descriptive normative beliefs for the present research. They define descriptive normative beliefs in relation to drinking as "the perception of other's quantity and frequency of drinking" (Borsari & Carey, 2003, pg. 331). While this definition is representative of much of the research done on normative beliefs and college drinking, it also highlights another area of confusion and inconsistency on the research of social norms. In particular it raises the question of whether or not we are really focusing on actual behavior, a descriptive norm, or perceptions of actual behavior, a descriptive normative "belief". It is my position that a clarification and consistent effort to differentiate between these two separate concepts is drastically needed if research in this area is to progress. Thus far, relatively few researchers have made a concerted effort to do so (Park, Klein, Smith, & Martell, 2009).

A similar concern also arises when we review the literature on injunctive norms. Borsari and Carey (2003) state that "Injunctive norms refer to the perceived approval of drinking…. and represent perceived moral rules of the peer group" (pg. 331). I believe that this portrayal of injunctive norms is actually more representative of an injunctive normative belief, because it is defining the concept in terms of "perceived" approval, rules, and values and not just one individual factor.

The will argue that the present definition of an injunctive norm does not account for the moral rules, values, and beliefs of the actual person in the situation, which indubitably factor into a person's decision to consume alcohol. Therefore, although a person's own moral principals governing behavior will most certainly be influenced by the rules and beliefs either imposed or held by others around him or her, the final action of the person will ultimately be based on the person's own internalized value system, which can be defined as a personal normative belief. Adding this additional measure while simultaneously clarifying other operational definitions should help to pinpoint the role of normative beliefs in terms of alcohol consumption and abuse.

One study that has examined the relationship between personal normative beliefs and alcohol use was conducted by Elek et al. (2006). In addition to studying the influence of injunctive and descriptive normative beliefs, they also included a measure of personal normative beliefs, which they defined as "internalized values and expectations for behavior, irrespective of external reward or evidence" (Elek et al., 2006, pg 148). Results suggested that while all three norm types accounted for a significant proportion of the variance in substance abuse for this sample, personal beliefs accounted for a larger percentage of the variance than did injunctive beliefs or descriptive beliefs.

While this study does provide some evidence suggesting that personal normative beliefs play an important role in one's decision of whether or not to consume alcohol, there are several limitations of the above mentioned study, which warrant further research for our particular population of interest. First of all, the Elek et al. study (2006) used a sample consisting of mainly inner-city Mexican/Mexican American junior high students from the southwestern region of the United States. Therefore, the results may

not generalize to other more diverse populations. Additionally, the researchers did not

isolate alcohol use as their dependent variable, but instead choose to focus on overall

substance abuse, which included the variables of cigarette smoking and marijuana use.

Clearly, there is a need for additional research, using a representative sample of college

students, and also focused specifically on alcohol use, to determine whether or not

personal norms play a role in alcohol abuse among college students.

Normative Samples

Aside from the particular normative beliefs being assessed, another possible

explanation for the mixed findings from previous research studies stems from the use of

varied normative samples, some of which are quite removed from the individual in

question. For example, Elek et al. (2006) found that adolescents sighted their parents as

being the most influential people regarding their decision to either use or not to use

illegal substances. This suggests that the closer the normative group is in relation to the

individual in question, the more influence that norm group has over the individual's

behavior. This finding also appears to be the case when looking at drinking behavior

among college students. A meta-analysis by Borsari and Carey (2003) found that

although overestimation of alcohol use appears to occur regardless of the particular

norm reference group used, estimates for more proximal reference groups may be more

factually based than more distal reference groups, and henceforth, more likely to

influence behavior. Together these findings are consistent with the concept of the social

identity approach, which states that the groups a person most closely identifies with, or

"in-groups", will have a stronger influence over the person's attitudes and behaviors

than the groups further removed from the person, or the so called "out-groups" (Smith & Louis, 2008).

The concept of the social identity approach is slowly becoming popularized in normative research on college drinking behavior, and recent studies have lent support to the idea that the normative beliefs of students' in-groups need to be the focus of alcohol abuse prevention campaigns (Campo et al., 2003). For example, one recent study found that for a sample of 895 undergraduate students, the most significant predictor of drinking frequency for both male and female students was the perceived drinking frequency of close female friends, followed by close male friends. Additionally, the best predictor of drinking quantity among college students was the perceived drinking quantity of close same-sex friends, followed by close opposite sex friends (Thombs et al., 2005). Unfortunately, this particular study was based on the social norms model, and therefore, did not contain any information on the influence of injunctive normative beliefs of close friends. This information would have proved valuable considering that other studies focusing on normative beliefs and drinking behavior of close peer groups have found injunctive norms to account for a much higher percentage of the variance in drinking behavior than descriptive norms (Larimer et al., 2004).

Other studies have also found support for the idea that close reference groups need to be used during normed based prevention campaigns. For example, Dunleavy (2008) found that neither campus injunctive or descriptive norms proved to be significant predictors of intention to get drunk for a sample of 237 undergraduate students. However, the normative beliefs of close friends did account for a small, although significant proportion of the variance on intention to get drunk. Unfortunately,

it is uncertain how much of this variance can be explained by either injunctive or descriptive normative beliefs, due to the fact that a measure of a subjective norm was calculated.

Although there is strong evidence suggesting that close in-group norm reference data should be used when conducting a norm-based alcohol prevention campaign there are some factors that must first be addressed, the most prominent of these being that in the case of some particularly at risk groups, such as fraternity and sorority members, the already high-level of drinking behavior, along with the increased social interaction among those members, may imply that group members actually are basing their normative beliefs on actual behavior, and that there is no misperception which could be corrected in an attempt to reduce drinking behavior (Larimer, Irvine, Kilmer, & Marlatt, 1997; Larimer et al., 2004). Additionally, in these high risk-populations, there may be no actual healthy normative behavior to compare the misperceived normative belief to, due to the fact that actual drinking levels are already at a dangerously high rate (Carter & Kahnweiler, 2000; Larmimer et al., 2004). In these situations, a healthier, albeit more proximal, norm reference group may be the only reasonable comparison option.

A final note should be made on norm reference groups before moving on. A recent study by Park et al. (2009) found that for a sample of undergraduate students, campus wide injunctive and descriptive norms did not account for a significant amount of the variance in regards to intention to drink alcohol. However, national injunctive and descriptive norms did account for a significant proportion of the variance. This suggests that individual behavior may not be based solely on the perceived norms of an

individual's most proximal reference groups, but may also be based impart on a perceived blanket norm from a more distant although larger national reference group.

Religious Orientation

Aside from one's close college friends, another norm reference group that may have a significant degree of influence on a college student's decisions and attitudes towards alcohol use is his or her particular religious congregation. Several past studies have shown that a correlation between religious orientation and religiosity and subsequent drinking behavior exist (Ford & Kadushin; 2002; Hutchinson, Patock-Peckham, Cheong, & Nagoshi 1998; Patock-Peckham, Hutchinson, Cheong, & Nagoshi, 1998). Despite these findings, norm-based alcohol use prevention campaigns have failed to incorporate a measure of religiosity into their efforts. Therefore, the current study will seek to determine whether or not normative beliefs stemming from an individual's particular religious affiliation and belief system account for a significant proportion of the variance in regards to alcohol consumption.

Several reasons why religious groups serve as highly important norm reference groups have been put forth. For example Ford and Kadushin (2002) noted that religious groups have the ability to serve an integrative function. They suggested that, because members of separate religious groups each adhere to a different doctrine, members from the same denomination begin to see each other as a norm-reference point. This has the effect of forming the members of a congregation into one's own in-group, which in accordance with social-norms theory, begins to shape the way an individual forms opinions on what actions are appropriate based on the overall consensus of the religious group, or "moral community" as a whole. Ford and Kadushin (2002) go on to argue that

the basic position of the individual's religious group on alcohol tolerance will serve as the normative content upon which each individual bases his or her own decision on whether or not to use alcohol. Therefore, increased involvement within one's own religious group should lead to lower rates of alcohol consumption among parishioners who belong to a denomination that opposes alcohol use (Ford & Kadushin, 2002).

The results of the Ford and Kadushin (2002) study tend to support the assertions of the researchers. For example, data suggested that individuals who belonged to religious denominations that were opposed to the use of alcohol were less likely to be at risk for alcohol dependency than individuals who belonged to a religious group that did not object to alcohol use (Ford & Kadushin, 2002). Additionally, it was found that Caucasian individuals who attended weekly religious services were 24.2% less likely to be at risk for alcohol dependence than were people who did not attend services, whereas African Americans who attended weekly services were 19.7% less likely to be at risk.

Surprisingly, this reduction in risk occurred regardless of whether or not the particular denomination the individual belonged to possessed a strong anti-alcoholism doctrine. The researchers suggest that this finding may indicate that individuals who are well integrated into a religious social system may be less likely to drink alcohol, both because such an association may reduce existential anxiety, which reduces the need for self-medication, a position that can also be found in earlier works by Klausner (1964), and, because such proscriptive social systems are less likely to allow alcohol abusers into their ranks (Ford & Kadushin, 2002), a position that has similarly been proposed and supported by an earlier work by Allport and Ross (1967). Other, more recent studies have also produced similar results, such as Schmitt's (2002) finding that self-

reported religiosity was significantly correlated with sexually moral practices and sexual restraint in men (as cited in Rowatt & Schmitt, 2003), and Rowatt et al.'s (2009) finding that people scoring high in general religiousness appeared to be more intolerant towards people believed to behave in a manner inconsistent with traditional religious teachings. Due to the fact that these findings suggest that the particular religious doctrines of an individual's group may not account for as much of the variance, in regards to the individual's own viewpoints and drinking behavior, as does simply being well-integrated into a religious group, it is important to look at other religious variables that have been shown to influence behavior.

One particular religious variable found in the literature that may play an essential role in one's decision to overindulge in alcohol is one's religious orientation. The concept of religious orientation was first described by Allport and Ross (1967). They conceptualized religious orientation into two categories, one category being known as intrinsically religious and the other category known as extrinsically religious.

While Allport and Ross believed that all individuals fell somewhere on a continuum between these two categories, they also believed that most people tended to fall close to one side or the other of the gamut. People who were to the greater extent extrinsically oriented viewed religion as a means to his or her own ends (Allport & Ross, 1967). That is to say, extrinsically motivated individuals do not place as much significance on the doctrine of their religion as they place on the opportunities for socialization and enhancing their status within the community that religion offers them. Inversely, intrinsically oriented individuals are more devoted members who view

religion as a means to its own end. These individual's ascribe to live their lives in accordance with religious doctrine (Allport & Ross, 1967).

Although Allport and Ross believed that intrinsically oriented individuals would be more tolerant of abnormal behavior than extrinsically oriented people, due to their purported caring nature, recent evidence suggests that the opposite circumstance may actually be the more accurate depiction (Mak & Tsang, 2008). This is not altogether surprising, when we consider the restrictions that various religious groups place on certain behaviors, including the use of alcohol. Additionally, a correlation between strict adherence to religious doctrine and a tendency to be rigid and unable to tolerate ambiguity has been reported (Hassan & Khalique, 1981). Furthermore, Hutchinson et al. (1998) have reported that individuals scoring high in intrinsic religiosity tend to also display a proneness to obsessive-compulsive disorder. Therefore, intrinsically religious individuals may actually find it aversive to display behaviors that are not in agreement with their own moral doctrine that has been passed down by their religious group. This may act as the defensive mechanism that prevents highly intrinsic individuals from over-indulging in alcohol. On the other hand, Hutchinson et al. (1998) also found that individuals who were highly extrinsically religious, especially those who did not claim any specific religious affiliation, tended to possess irrational coping skills. Therefore, there is a strong indication that these individuals are more likely to abuse alcohol and other illegal substances, than are their intrinsically religious counterparts, in an attempt to manage stress.

Although, the theories mentioned above have strong empirical evidence to support their viewpoints on how religious orientation should affect alcohol use, the only

study known by the researcher to directly examine the effect of religious orientation on

alcohol use among college students produced mixed results. In this study, Patock-

Peckham et al. (1998) found that intrinsically religious Protestants tended to perceive

themselves as having a greater degree of control over their drinking behavior than did

extrinsically religious Protestants. They also reported lower levels of alcohol

consumption and less frequent rates of inebriation. On the other hand, intrinsic

religiosity was positively correlated with drinking problems among Catholic

participants, along with a number of negative psychological factors, including

neuroticism and depression. These results are surprising, when we consider an earlier

finding suggesting that while Catholics may be more accepting towards moderate levels

of alcohol consumption than are Protestants, they are actually more antagonistic towards

the prospect of inebriation (Mullen, Blaxter, & Dyer, 1986). One explanation for this

finding may come from the fact that these negative psychological factors may actually

lead to alcohol abuse in intrinsically religious Catholics, despite a generally antagonistic

view of alcohol use prevalent in their religious doctrine. Support for this theory comes

from findings which suggest that Catholics tend to have more psychologically related

problems than do Protestants, or non-religious individuals. For example, Hutchinson et

al. (1998) found that Catholics tended to be more neurotic than individuals from other

religious groups, and also non-religious people. Additionally, Catholics reported higher

feelings of guilt associated with a failure of self-control than did non-religious people.

Finally, high scores of intrinsic religiosity on the Religious Orientation Scale (Allport &

Ross, 1967) were predictive of obsessive-compulsive cognitions and behaviors for

Catholics, but not for Protestants or non-religious individuals. Therefore, the evidence

suggests that intrinsically religiosity and drinking may actually have a negative cyclical relationship among Catholics, whereby poor pathological health leads to alcohol consumption, which causes high levels of shame and guilt in intrinsically religious Catholics. This, in turn, worsens their already problematic pathological state, which then leads to further alcohol abuse. This theory was supported by the Patock-Peckham (1998) study, which reported a correlation of only 0.02 between intrinsic religiosity and drinking problems, after controlling for pathological reasons for drinking; a reduction of 0.20 in the correlation.

Similar results were also found for extrinsic religiosity. Patock-Peckham et al. (1998) found that extrinsic religiosity was positively related with celebratory reasons for drinking and expectations for physiological changes as a result of drinking among Catholics. Meanwhile, extrinsic religiosity was negatively correlated with the perceived accepted drinking norms of the people in the lives of Protestant individuals. These results suggest a potential positive relationship between injunctive normative beliefs on alcohol consumption and extrinsic religiosity for Protestants, but not for other religious groups. These results also contradict the findings of the Ford and Kadushin (2002) study, which suggested that simply being well-integrated into a religious community may account for a larger percentage of the variance in alcohol consumption than does one's particular religious affiliation. Clearly, additional research on the role that religious orientation plays on drinking behavior among college students is needed to help clarify some of these issues.

Five-Factor Traits

One final issue that must be considered when examining college drinking behavior is what percentage of the variance is accounted for simply by the personality traits of the students. As was mentioned above, the factors that we are already interested in; normative beliefs, religiosity, and religious orientation, have already been found to correlate highly with certain personality traits, including neuroticism, obsessive-compulsiveness, conscientiousness, and impulsivity (Back, Schmukle, & Egloff, 2009; Borkenau & Liebler, 1992; Hutchinson et al., 1998; Patock-Peckham et al., 1998; Rowatt & Schmitt, 2003). Additionally, several studies have found evidence linking personality traits directly to alcohol use. For example, Osberg et al. (2010) found that conscientiousness, neuroticism, agreeableness, and openness were all negatively correlated with scores on the College Life Alcohol Salience Scale (CLASS), an instrument designed to measure drinking motives among college students. At the same time, CLASS scores were positively correlated with extraversion scores on the Big Five Inventory. Additionally, Paunonen (2003) found that high levels of extraversion and low levels of conscientiousness accurately predicted high levels of alcohol consumption in a sample of over 400 college students.

What this evidence suggests is that certain individuals are naturally inclined to participate in certain activities, such as drinking alcohol, closely adhering to norms, or following the religious doctrines of one denomination as opposed to another, based on preexisting personality profiles (Patock-Peckham et al., 1998). While some researchers have argued that five factor personality traits should be controlled, because of the way in which they overlap with other important factors (Rowatt & Schmitt, 2003), the present

study will actually seek to measure the unique proportion of the variance in alcohol use

behaviors among college students accounted for by the five-factor personality traits of

neuroticism, conscientiousness, agreeableness, openness, and extraversion. Such

research can provide evidence indicating whether or not normative beliefs and

religiosity independently contribute to alcohol consumption rates among college

students, or if they can be understood as simple manifestations of the preexisting big-

five factors. Furthermore, high correlations between personality traits and a specific

type of normative belief may indicate that alcohol prevention campaigns need to become

more individualized so that people, who display personality characteristic indicating that

they pay more attention to one type of norm than another, receive accurate information

on that type of norm during a normed referenced alcohol prevention campaign. In this

way we can tailor our norm reference data to specific individuals. Such action should

prove helpful, when we consider past research indicating that alcoholics find some

treatments more helpful than others, depending on their personality type (Price &

Curlee-Salisbury, 1975; Zivich, 1981).

The Current Study

      Although the above mentioned studies have identified several variables that may

be involved in a college student's decision to either abstain from or engage in the

consumption of alcohol, we remain unable to determine whether or not these variables

account for a unique proportion of the variance in alcohol use behaviors, or whether

some of these variables are simply smaller facets of other more important variables.

Therefore, the present study will rely on multivariate regression analyses in order to

determine which variables account for a statistically significant unique proportion of the

variance in regards to alcohol use rates among college students. This new information, along with more standardized operational definitions, will help to move the field forward by identifying which variables should be focused on during intervention techniques, and which factors fail to account for a significant proportion of unique variance. Results from past studies are displayed in Table 1.

CHAPTER II

METHOD

Chapter Overview

The purpose of this study is to lend clarity to the question of which factors uniquely account for a significant proportion of the variance in regards to alcohol use behaviors. Additionally, the study seeks to lend support for the position that a redefined and standardized way of measuring normative beliefs needs to be implemented in norm related research. This chapter provides an overview of the methodology of the study, and lays out in a detailed fashion how the study was conducted and how the resulting data was analyzed. The following sections are contained: research perspective and design, research questions and hypotheses, participants, research variables, research instruments, data collection procedures, statistical analysis, bias and error, validity and reliability, and a chapter summary.

Research Perspective and Design

The study implemented a multivariate regression analysis procedure. A stepwise multivariate analysis allowed the researcher to enter all variables into a regression model simultaneously, so that only factors contributing to a unique proportion of the variance would be included in the final regression model. Keeping in mind that this study sought to determine which factors accounted for the high rates of alcohol consumption

displayed by college students, it would have been neither practical nor ethical to have implemented a between-subjects experimental design and then implement a separate predictor variable to each group. In fact, in the case of certain inherent factors such as personality or religious orientation, this would have proven impossible. Therefore, in order to account for each of the variables in question, and avoid inflicting unnecessary harm on the participants, the study relied on regression analyses.

During data collection, participants recorded all of the data for the study themselves, as they completed a series of questionnaires. Additionally, because the study relied solely on self-report data taken from four surveys, multiple participants were able to be tested simultaneously. Once all participants completed their surveys, each participant, as well as their corresponding surveys, were number coded and participant names were removed from the surveys if provided. This helped to insure confidentiality.

During the first stage of data analysis, multiple one-way analyses of variance were conducted, along with one independent sample t-test. These procedures were conducted in order to compare demographic groups across a number of independent and dependent variables. A correlation matrix for all independent and dependent variables was also conducted to examine possible relationships between variables. These as well as all other data analysis procedures are further described in the results section.

After conducting these initial procedures, data was screened in order to make it suitable for regression analysis. Participants who failed to fully complete the study inventories were dropped from any future analyses. A Mahalanobis test for outliers was then conducted, resulting in the elimination of the data from four additional participants.

This resulted in a final sample of 140 participants, which is described below. Following data screening, the researcher conducted four multivariate-regressions, one for each dependent variable.

Four additional multivariate regressions were ran after removing nondrinking participants from the data set, in order to determine whether or not any differences would be seen between the regression models for drinking students when compared to the original sample of both drinking and nondrinking college students. It was thought that these further analyses would provide a more objective picture of what variables account for the variance seen in alcohol use behaviors, because they would not be influenced by the large number of nondrinking participants in the sample.

The final stage of data analysis involved any additional procedures that were deemed necessary to answer questions brought about by the previous stages of analysis. These included two additional regression analyses to examine the role of openness in alcohol use for different age groups, a one-way ANOVA comparing personality measures across religious affiliations, and another one-way ANOVA examining difference in alcohol use rates across religious affiliations.

Research Questions and Hypotheses

At this point, it may be helpful to review the research questions and corresponding hypotheses of this study. The most prominent question that this study sought to answer is which factors accounted for a unique proportion of the variance in regards to alcohol use in college students. A secondary question asked whether or not including a measure of personal beliefs would account for a unique proportion of the

variance, aside from that already accounted for by injunctive beliefs and descriptive beliefs.

In regards to these questions, the researcher predicted that personal beliefs would account for a larger percentage of unique variance in regards to alcohol use behaviors than would either injunctive or descriptive beliefs. The researcher also predicted that an overall measure of general religiosity would account for the next largest percentage of unique variance after having already factored in normative beliefs. Finally, the researcher predicted that a large overlap in variance accounted for will occur between the predictor variables of religious orientation, injunctive norms, and descriptive norms. Furthermore, it was also predicted that individuals scoring high in intrinsic religious orientation would also rely heavily on injunctive norms when deciding whether or not to drink alcohol. On the other hand, individuals scoring high in extrinsic religious orientation would be found to rely more heavily on descriptive norms when deciding whether or not to drink alcohol.

Participants

For this study, 168 participants were recruited from a population of college students from a large southwest state college. While this would serve as a convenience sample for a majority of studies, this sample is particularly well suited for this study, because the population in question is actually college students. Data from seven participants was removed from the data analysis, because participants did not meet age restrictions. Scores from 17 additional participants were removed from the analysis, due to missing or incomplete data. Finally, after conducting an initial regression to check for

outliers, 4 additional participants were removed from the data set for a final sample of n = 140.

The majority of participants in the final sample were women (72.1%) and white (63.6%). A frequency distribution also showed a large percentage of Hispanic participants (25.7%). The religious affiliation of the participants is as follows; 36.4% nondenominational Christians, 28.6% Catholic, 15% Protestant, 15% atheist/agnostic, and 5% other.

Participants were recruited from introductory psychology classrooms. Forty-eight students were recruited in class by the researcher. The study was introduced to students at the beginning of a class period and then students were allowed to complete the survey packet after signing a consent form. After participants completed the surveys, they were handed a debriefing form. Participants then began filling out a teacher evaluation form that was not related to the study.

Due to time restrictions, the remaining participants were also recruited from introductory psychology classrooms. However, for these remaining participants, the professor teaching the class introduced the study to her students. Interested students signed a consent form and were given the testing packet to complete outside of class time. Participants then handed the survey packets back to the professor during the corresponding class period. After handing in their packets, participants received a debriefing form

Research Variables

Based on the research questions that the proposed study is designed to answer, 14 predictor variables and four dependent variables have been identified. The predictor

variables are injunctive normative beliefs, descriptive normative beliefs, personal

beliefs, general religiosity, intrinsic religiosity, extrinsic religiosity, religious affiliation,

extraversion, openness, conscientiousness, agreeableness, neuroticism, ethnicity, and

gender. The dependent variables are number of drinks consumed during an average

drinking week over the past 30 days, number of hours spent drinking during an average

drinking week over the last 30 days, number of drinks consumed during a participant's

heaviest drinking week over the last 30 days, and number of hours spent drinking by the

participant during their heaviest drinking week over the past 30 days. These variables

were each measured on the Daily Drinking Questionnaire-Revised (DDQ-R).

Injunctive, descriptive and personal beliefs were measured on a single survey

created by the researcher. Each belief type was measured by five items. Individual

items were rated on a five-point Likert scale. This method of norm measurement is

similar to that used by Elek et al. (2006) in their study on adolescent substance abuse.

Their exact measure was not be used for two reasons. First of all, their measure was

designed to examine substance use across a number of areas, not just alcohol use.

Additionally, the Elek et al. (2006) measure was designed to assess norms that would be

important to middle-school aged children and not college students.

General religiosity will be measured with three items borrowed from Krause's

(1991) study on stress, religiosity and abstinence from alcohol. These three items are

"In general, how important are religious or spiritual beliefs in your day to day life?",

"How often do you watch or listen to religious programs on TV or radio or listen to

religious media?", and " When you do have problems or difficulties in your work,

family, or personal life, how often do you seek spiritual comfort?" Each of these items was ranked on a five-point Likert scale.

Religious orientation will be measured using the Allport and Ross Religious Orientation Scale (Allport & Ross, 1967). An additional item will be added to ask participants what their religious affiliation is. Gender will also be measured with a single item on an intake inventory. Finally, five-factor personality traits will be measured with the Big Five Inventory (BFI; John & Srivastava, 1999).

Research Instruments

Daily Drinking Questionnaire (DDQ-R) The DDQ-R is a widely used drinking questionnaire that asks participants to report their drinking behaviors over the past 30 days. For the current study, participants were asked how many drinks they consumed during a normal week and during a heavy week over the past 30 days. Participants were also asked the total number of hours they spent drinking during an average drinking week and during a heavy drinking week over the past 30 days. Collins, Koutsky, Morsheimer, and MacLean (2001) have reported that typical weekly drinking on the original DDQ is highly correlated with the average number of drinks consumed per day on a time line followback calendar (r = .86).

Big Five Inventory (BFI) The BFI is a 44-item personality inventory that groups items into the five factors of extraversion, openness, conscientiousness, agreeableness, and neuroticism. Items are rated on a 5-point Likert scale with scores ranging from "disagree strongly" to "agree strongly". The BFI's convergent validity with longer five-factor personality inventories is acceptable with validity coefficients ranging from .85 to .99 (John & Srivasta, 1999).

Allport and Ross Religious Orientation Scale The Religious Orientation Scale (ROS) consist of 21 items that are each rated on a 5-point scale. While all items can be rated on one continuous scale, Allport and Ross recommend that item scores are divided into two separate subscales, one for intrinsic religiosity and one for extrinsic religiosity. This is how the items will be scored for this particular study.

Data Collection Procedures

Data on injunctive, descriptive, and personal beliefs were collected by having participants complete 15 items on a pencil and paper inventory. Participants were asked to rate each item on a 5-point Likert scale with scores ranging from 0 to 4. Higher scores were indicative of more pro alcohol use beliefs. Data on gender, age, ethnicity and religious affiliation were obtained on the same survey by having participants complete one item corresponding to each variable. Due to the fact that these measures are often voluntary on many surveys, the researcher made a special note on the consent form that informed participants that this information played a key role in the study. In regards to alcohol consumption rates, the participants were asked to complete the DDQ-R, which, as has already been noted, is a paper and pencil inventory that asks respondents to report on their frequency of alcohol consumption over the past 30 days. Finally, a measure of intrinsic and extrinsic religiosity for each participant will be obtained by having the participants complete the Allport and Ross Religious Orientation Scale. The Religious Orientation Scale consists of 21 questions, with each question rated on a 5-point scale.

Research Environment

Data for 48 participants were collected in a university classroom on a large state university in the southwestern region of the United States. Participants met in the classroom prior to the start of their introductory psychology class. Once the participants were present, informed consent documents were handed out and signed by the participants. Once informed consent documents had been collected, the intake inventory, the DDQ-R, BFI, and Allport and Ross Religious Orientation Scale were handed out to participants. The participants were asked to complete the inventories and then hand them back to the researcher. Debriefing forms were then handed out to each of the participants. The remaining participants were also given consent forms and testing packets in the university classroom, but were then asked to complete the testing packet at home and return it to the classroom during the next class period.

This testing environment was particularly well suited for this study, because it allowed the research to obtain data from multiple participants in a short amount of time and with minimal instruction. Furthermore, this procedure was also convenient for participants, due to the fact that they were already required to be on campus during the week. This allowed the researcher to obtain data from a large sample of participants in a minimal amount of time.

Data and Statistical Analysis

All raw data were actually recorded by the participants themselves. Once all data had been collected and recorded, the researcher then coded and analyzed the data using SPSS software.

Once all data had been entered, the research ran a series of analyses in order to determine which of the predictor variables accounted for a significant proportion of unique variance in a regression model. Predictor variables were entered in a stepwise manner, so that the unique variance accounted for by each variable could be calculated. One way analyses of variance and t-test were also conducted to compare groups across demographic variables.

Potential Bias and Error

Due to the fact that the study relied on regression analyses, all variables entered into the data analyses were those that the researcher believed to possibly play a significant role in influencing alcohol use behaviors in a sample of college undergraduates. The way in which these variables were assessed was also based on the views of the researcher. Several variables that were not examined in the current study could be related to alcohol use among college students. Additionally, results may have also differed if the variables examined in this study were measured in a different fashion.

Validity and Reliability

Conclusion validity is the extent to which the assertions we make about what the data in a study means are reasonable. As was mentioned earlier, this is a multiple regression study. Therefore, the study is designed in order for us to make assertions on which of our predictor variables account for a significant proportion of unique variance in regards to alcohol consumption among college students. Therefore, although we did not directly test for a cause and effect relationship, causal assertions will be made. This is similar to what we would see in an experimental study.

Internal validity is the extent to which assumptions made about causal relationships are true. Although this is not an experimental study, the fact that the data will be analyzed by regression analyses does allow the researcher to infer some type of linked relationship between a predictor variable and a dependent variable. Therefore, although the data may not indicate a direct cause and effect relationship between an independent and dependent variable, the data may show that one or more of the predictor variables does indeed influence the alcohol use behavior among college students.

Construct validity refers to the extent to which an instrument measures the construct it was intended to measure. As was mentioned above, this study will rely on three widely used self-report surveys. The Daily Drinking Questionnaire- Revised (DDQ-R) has been shown to produce high correlations between participant responses and the actual number of drinks consumed over a 30 day period ($r = .86$).

The second survey, the Big Five Inventory (BFI), has been shown to measure neuroticism, extraversion, openness, conscientiousness, and agreeableness, with subscale alphas ranging from .79 to .88. Also, validity coefficients with longer measures of Big Five personality traits have ranged from .85 to .99. This has led Hampson and Goldberg (2006) to describe the BFI as "the best of the brief sets of five factor markers" (p. 766).

Finally, the Allport and Ross Religious Orientation Scale was the first inventory ever designed to measure religious orientation. Despite its age, the scale is still widely used and respected, and it remains one of only two widely used scales for measuring religious orientation.

External validity refers to the extent to which findings from a study can be generalized to the population at large. As was mentioned above, this study was designed for a very specific purpose, which is to help us further understand which factors contribute to the high rates of alcohol consumption among college students. Therefore, the results found by this study may not generalize to the wider population. However, considering that several of the predictor variables chosen for this study were indeed chosen because they were found to influence alcohol consumption rates in populations other than college students, it would not be surprising to find that the results of this study generalize to other populations that are at risk for alcohol abuse.

Summary

This chapter first outlined the reasons why the study was designed to employ a multivariate regression analysis. It then gave a review of the research questions for the study and their corresponding hypotheses. These questions are centered on what factors contribute to alcohol use behaviors in college students. The chapter also went on to describe the demographics of the sample. Research variables and testing instruments were also discussed and an overview of the reliability and validity of the DDQ-R, BFI, and Allport and Ross Religious Orientation Scale was given. The chapter also included sections discussing how data were collected, the setting in which this took place, and also the way in which this data was analyzed. Finally, the potential bias and error of the results was discussed, in terms of how these are inherent in the study's design. The remainder of this document provides an overview of results, as well as what these results tell us we should focus on in the future.

CHAPTER III

RESULTS

Initial Analyses

During the initial stage of data analysis, a frequency distribution was run, for the original 161 participants who met age guidelines for the demographics of ethnicity and religious affiliation. This distribution showed a relatively high percentage of white participants (62.1%, n = 93) compared to other groups (Hispanic/Latino, 26.4%, n = 43; Black, 6.4%, n = 12; Mixed Origin, 3.6%, n = 6; West Indian, 0.7% n = 1; and Philippine 0.7%, n = 1). Four participants elected not to provide their ethnicity. Due to the discrepancies in sample size, this variable was collapsed into two groups, white and nonwhite. Large discrepancies in number for religious affiliation were also seen in the original sample (14.6% atheist/agnostic, n = 21; 27.8% Catholic, n = 44; 7.6% Baptist, n = 12; 35.4% nondenominational Christian, n = 61; 1.4 % Church of Christ, n = 2; 2.1% Lutheran, n = 4; 4.2% Methodist, n = 6; 0.7% Jewish, n = 1; 0.7% Presbyterian, n = 1; 0.7% Anglican, n = 1; and 4.9% other/mixed beliefs, n = 7). Therefore, religious affiliation was collapsed into five groups; atheist/agnostic, Catholic, Protestant, nondenominational Christian, and other. The demographic breakdown of the sample following this regrouping of variables is displayed above where the demographics of the

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initial regression sample are given. This breakdown of variables was used in stages two and three of the analysis.

Following the running of the frequency distribution, one-way ANOVAs were conducted in order to determine whether or not demographic variables might influence drinking behavior. Results show that participant age did not significantly differ in regards to the number of drinks consumed during a typical drinking week [$F(6,152) =$ .921, p = 0.481], number of hours spent drinking during a typical week [$F(6,152) =$ 1.064, p = 0.387], number of drinks consumed during a heavy drinking week [$F(6,151) =$ 1.117, p = 0.355], and number of hours spent drinking during a heavy drinking week [$F(6,151) = 1.181$, p = 0.319]. Results also showed that ethnicity rates did not significantly differ in regards to the number of drinks consumed during a typical drinking week [$F(5,150) = 0.744$, p = 0.592], number of hours spent drinking during an average drinking week [$F(5,150) = 0.530$, p = 0.753], number of drinks consumed during a heavy drinking week [$F(5,149) = 1.067$, p = 0.381], and number of hours spent drinking during a heavy drinking week [$F(5,149) = 1.110$, p = 0.357]. Finally, religious affiliation rates did not significantly differ in regards to the number of drinks consumed during an average drinking week [$F(11,148) = 1.598$, p = 0.105], number of hours spent drinking during an average drinking week [$F(11,148) = 1.441$, p = 0.160], number of drinks consumed during a heavy drinking week [$F(11,147) = 1.063$, p = 0.395], and number of hours spent drinking during a heavy drinking week [$F(11,147) = 0.913$, p = 0.530]. On the other hand, for the final demographic variable, one sample t-tests showed that the number of drinks consumed during an average drinking week [$t(157) = 3.921$, p < 0.001], number of hours spent drinking during an average drinking week [$t(157) = 1.961$, p =

0.052], number of drinks consumed during a heavy drinking week [F(156) = 4.141, p <

0.001], and number of hours spent drinking during a heavy drinking week [t(156) =

2.104, p = 0.037] were significantly different across genders. Average scores for alcohol

use behaviors across genders are displayed in Table 2.

        After completing the initial analyses, a correlation matrix for all demographic,

independent, and dependent variables was conducted. These correlations are displayed in

Table 3. Of note is the fact that all four dependent variables showed significant

correlations with one another. Additionally, a strong positive correlation was seen

between gender and religiosity. This suggests that religious beliefs and practices may

play a larger role in the lives of women than men. Strong negative correlations were also

seen between gender and personal and injunctive beliefs. This suggests that the views of

men and their friends may be more pro alcohol than the views of women. Also of note

was the fact that intrinsic religiosity was significantly correlated with personal beliefs and

injunctive beliefs. However, extrinsic religiosity showed no correlations with either of

these two variables, suggesting that extrinsic religiosity does indeed measure a concept of

religion outside of morality and a general sense of right and wrong.

Stage-Two Analyses

        The second stage of data analysis began by screening for missing data.

Participants with missing data across any variable were eliminated from the dataset. Next

outliers were identified by calculating Mahalanobis distance in a preliminary regression

procedure. Four participants were deleted from the analysis after receiving Mahalanobis

values over the acceptable chi square value of 37.70. This resulted in the final sample of

140 participants, the demographic breakdown of which is described in the methods section above.

After this final sample was selected, a stepwise multiple regression was conducted to determine which independent variables (general religiosity, intrinsic religiosity, extrinsic religiosity, personal beliefs, injunctive beliefs, descriptive beliefs, extraversion, conscientiousness, agreeableness, neuroticism, and openness) and demographic variables (gender, ethnicity, and religious orientation) were predictors of the four dependent variables. Age was not entered into the regression, because previous studies have shown uniform amounts of drinking for ages 18-24, and because the initial correlation matrix showed no relationship between age and any of the dependent variables.

Normality, linearity, and homoscedasticity were examined by plotting residuals by conducting another preliminary regression analysis with total number of drinks during an average drinking week serving as the dependent variable. The residual plot showed a fairly rectangular distribution with a slight positive slop attributed to the large number of nondrinking participants, which was expected. These findings were not believed to significantly weaken the regression, and data analysis was continued.

Regression results indicated that personal beliefs was the only variable that significantly predicted the total number of drinks consumed during an average drinking week, $R^2 = .358$, $R^2_{adj} = .353$, $F(1, 138) = 77.001$, $p < .001$. Personal beliefs was also the only variable that significantly predicted the total number of hours spent drinking during an average week, $R^2 = .281$, $R^2_{adj} = .276$, $F(1, 138) = 53.939$, $p < .001$. For total number of drinks consumed during a heavy drinking week, regression results indicated an overall model of two predictors, personal beliefs and gender, $R^2 = .325$, $R^2_{adj} = .315$, $F(2, 137) =$

32.916, p < .022. Personal beliefs were shown to account for 29.8% of the variance and gender was shown to account for 2.6% of the variance. Finally, personal beliefs was once again the only variable shown to be significant after running a regression analysis on total number of hours spent drinking during a heavy drinking week, $R^2 = .251$, $R^2_{adj} = .246$, F(1, 138) = 46.359, p < .001.

Analyses for Drinking Participants Only

After running the second stage of the data analysis, additional tests were conducted in order to see if the results found during the second stage may have been skewed by the large number of participants shown to be nondrinkers. During this final stage, nondrinkers were dropped from the analysis in order to see if any of the other independent or demographic variables would now prove to significantly predict differences in drinking levels among college students. Due to the fact that the sample used during this stage contained only students who reported drinking alcohol, it was believed that this sample might be more useful for examining variations in alcohol use rates among college students.

After dropping the nondrinking students from the dataset, a sample of 96 participants remained. Residuals were once again plotted using a regression analysis in order to test for assumptions. This scatter plot produced a rectangular distribution without the slightly positive slope that was seen in the second stage of analysis. All assumptions were therefore considered to have been met.

Regression results for total number of drinks consumed during an average drinking week produced an overall model with three predictors, personal beliefs, gender, and openness, $R^2 = .371$, $R^2_{adj} = .351$, F(3, 92) = 18.103, p < .001. Personal beliefs

accounted for 30.5% of the variance, whereas gender and openness accounted for 3.6% and 3.0% of the variance respectively. In regards to total number of hours spent drinking during an average drinking week, personal beliefs was the only variable found significant $R^2 = .178$, $R^2_{adj} = .170$, F(1, 94) = 20.390, p < .001. For the total number of drinks consumed during a heavy drinking week, both personal beliefs and gender were found to be significant predictors, $R^2 = .291$, $R^2_{adj} = .276$, F(2, 93) = 19.079, p < .001. Personal beliefs were found to account for 21.3% of the variance whereas gender account for 7.7% of the variance. Finally, personal beliefs was once again the only variable found to predict the total number of hours spent drinking during a heavy drinking week, $R^2 = .121$, $R^2_{adj} = .111$, F(1, 94) = 12.902, p = .001.

After running these regressions, the researcher was interested in examining whether or not the fact that openness was found to significantly account for total number of drinks during an average week for this sample might be accounted for by the fact that young students who had not consumed alcohol in high school were now experimenting with alcohol as a means of exploring the new freedom that comes with entering college. In order to examine this question, two additional regressions were run. The sample for the first regression included drinking students between the ages of 18 and 19. This compromised 45% of the sample and was expected to include members of mostly the freshman and sophomore classes. The second regression included drinking participants between the ages of 20 and 24, which compromised 55% of the total drinking sample.

After running the first regression, it was found that personal beliefs and extraversion were significant predictors of the total number of drinks consumed during an average drinking week for this age group, $R^2 = .289$, $R^2_{adj} = .254$, F(2, 41) = 8.334, p =

.001. Personal beliefs accounted for 20.7% of the variance and extraversion accounted for 8.2% of the variance. Openness was not found to be significant.

The second regression showed that personal beliefs, openness, and injunctive beliefs significantly predicted total number of drinks consumed during an average week for college drinkers age 20-24, $R^2 = .491$, $R^2_{adj} = .459$, F(3,48) = 15.406, p < .001. Personal beliefs accounted for 36.9% of the variance, openness 7.2%, and injunctive beliefs 5.0%.

These results do not support the assumption posted above that suggested that openness may have proven significant during the initial regression for drinking students due to a large number of younger students using alcohol as a means of exploring new experiences. The fact that average scores for openness across these two groups on the Big-Five Inventory proved very similar also fails to support this original theory (openness ages 18 and 19 = 35.34, openness ages 20-24 = 36.97).

Additional Procedures

After reviewing previous studies, it was deemed necessary to conduct further analyses to compare the findings found in the present study to those found in previous studies. The first analysis conducted was a one-way ANOVA that examined alcohol use rates across religions for all participants included in the final sample. Results indicated that significant differences were not seen between groups for total number of drinks consumed during an average week [F(4,139) = 1.994, p = 0.099], total number of hours spent drinking during an average week [F(4,139) = 2.095, p = 0.085], total drinks consumed during a heavy drinking week [F(4,139) = 0.577, p = 0.184], and total number

of hours spent drinking during a heavy drinking week [$F_{(4,139)} = 0.451$, $p = 0.771$].

Descriptive are presented in Table 4.

An additional ANOVA was also conducted to compare personality traits across religious groups. Descriptive statistics are presented in Table 5. Results indicated that groups did not significant differ for the measures of extraversion [$F_{(4,139)} = 0.582$, $p = 0.676$], openness[$F_{(4,139)} = 2.430$, $p = 0.051$] , conscientiousness [$F_{(4,139)} = 0.902$, $p = 0.465$] , or neuroticism [$F_{(4,139)} = 0.282$, $p = 0.889$]. However, a significant difference was found between religious groups for the measure of agreeableness [$F_{(4,139)} = 5.027$, $p = 0.001$]. Post-hoc Sheffe's indicated that this finding was accounted for by significant lower agreeableness scores for atheist and agnostics when compared to Catholics and Protestants.

A factor analysis was conducted to determine whether or not any of the initial independent variables could be combined into a single component, and also to see if adding power to the regression analyses by reducing the number of independent variables would affect results. Principal components analysis was conducted using a promax rotation. This analysis revealed five components. Eigenvalues suggested that the initial variables of intrinsic religiosity, general religiosity, and descriptive beliefs loaded onto component one. Component one was named *ethics*. Personal beliefs and injunctive beliefs loaded onto component 2, which was named *attitudes.* Agreeableness, conscientiousness, and neuroticism loaded onto component three, which was labeled *judgment*. Component four, *outgoingness,* was comprised of two variables openness and extraversion. Extrinsic religiosity was the only variable that loaded onto component five. Therefore, component five was labeled *extrinsic religiousity2*. Components one through

five accounted for 20.77%, 13.90%, 12.92%, 10.98%, and 9.65% of the variance

respectively.   Component loadings are shown in Table 6.

Five new variables were created to account for each component discovered by the

factor analysis. As mentioned above, these new variables were *ethics, attitudes,*

judgment, outgoingness, and *extrinsic religiousity2*. To create these new variables, total

values for each of the original dependent variables were converted to a z scores. This

was done to account for the fact that the original 11 independent variables were not all

scored on the same scale. Participant z scores for neuroticism were reversed scored to

account for the fact that neuroticism negatively loaded onto component three, judgment.

Following the z score conversions, values for the new variables were calculated by

summing the z scores for each component, and then dividing by the total number of

original independent variables listed under each component to create a mean score.

After these new variables were created, four additional stepwise regression

analyses were conducted to see if any of the components uncovered by the factor analysis

would account for a unique proportion of the variance for the four dependent variables.

Results revealed that component two, *attitudes,* was the only variable found to

significantly predict a unique proportion of the variance in regards to total number of

drinks consumed during an average drinking week, $R^2 = .324$, $R^2_{adj} = .319$, $F(1, 142) =$

67.95 $p < .001$, total hours spent drinking during an average drinking week, $R^2 = .288$,

$R^2_{adj} = .283$, $F(1, 142) = 57.525$, $p < .001$, total number of drinks consumed during a

heavy drinking week, $R^2 = .262$, $R^2_{adj} = .257$, $F(1, 142) = 50.34$, $p < .001$, and total

number of hours spent drinking during a heavy drinking week, $R^2 = .249$, $R^2_{adj} = .244$,

$F(1, 142) = 47.19$, $p < .001$.

CHAPTER IV

DISCUSSION

Factors Influencing Alcohol Use Behavior

The main purpose of this study was to shed light on the question of why previous attempts to lower alcohol consumption rates among college students have proven unsuccessful. Past research has shown that the vast majority of alcohol use reduction campaigns have relied on presenting descriptive norms to college students in order to help correct misperceptions of what actual drinking levels are on college campuses. The assumption behind this plan of action is that perceived descriptive normative beliefs on alcohol use rates would be higher for the majority of students than would be actual drinking levels. Therefore, showing actual drinking levels to college students is hoped to produce a level of cognitive dissonance that will hopefully influence college students to drink less often.

Previous research has indeed indicated that college students do in fact tend to overestimate alcohol use rates on college campuses (Borsari & Carey, 2003). However, alcohol reduction programs that present actual descriptive alcohol consumption levels remain ineffective. This information has led to numerous attempts to determine what

other factors might contribute to alcohol use among college students. As was highlighted in the introduction of this paper, some of the more commonly studied variables include injunctive and descriptive norms, along with personal norms, religious variables, such as general religiosity and religious orientation, and finally, personality traits.

Although past research has shown strong correlations between these variables and college drinking behavior, no definitive conclusions have been drawn in regards to what extent any of these variables contribute to actual drinking levels. These mixed findings have led to a general stagnation and redundancy in this area of research for over a decade. In fact, some researchers have been arguing since the early 1990s that we should stop studying some of these variables and move in a new direction (Azjen, 1991; Spark et al., 1995).

In order to help begin to clarify what variables are actually worth studying when examining causal relationships in regards to college alcohol consumption rates, the present study relied on a number of regression analyses. The researcher proposed a model based on past research that predicted that personal normative beliefs would account for the largest percentage of the variance, followed by a measure of general religiosity. The results from the current study do indeed suggest that personal normative beliefs account for the largest percentage of the variance in regards to college drinking behaviors. In fact, personal beliefs was the only variable that proved significant in every regression analysis.

These results are similar to those found by Elek et al. (2006) in their study on substance abuse behaviors in early-adolescent Mexican-Americans. However, the Elek et al. (2006) study also found descriptive and injunctive norms to account for a large

percent of the variance as well, whereas the current study found no evidence suggesting that descriptive normative beliefs play any role in determining alcohol use rates, and injunctive norms account for only a minimal percentage of the variance at best after already factoring in personal beliefs. Part of the reason for this discrepancy may have been the way in which personal beliefs were defined and measured in the two studies. Elek et al. (2006) defined personal normative beliefs as internalized values that occur irrespective of external outcomes. The present study defined personal normative beliefs as a person's own values and opinions held on a particular topic based upon a variety of outside sources, including external pressures and values. This decision was made, based on the belief that it would be nearly impossible for an individual to form opinions on a topic that were not based, at least in part, on the belief systems and actions of those around them. Therefore, it is possible that a proportion of the variance that would have been attributed to injunctive and descriptive norms in previous studies was presently accounted for almost entirely by the measure of personal normative beliefs. In fact, a significant correlation of $r = 0.659$ between injunctive normative belief scores and personal normative belief scores tends to support this conclusion. Factor analysis also showed that these to variables loaded onto the same component, labeled attitudes, because they were both thought to assess one's general opinion on whether or not there was anything wrong with college students drinking alcohol.

One the other hand, a significant correlation was not found between personal beliefs scores and descriptive beliefs. Therefore, it is unlikely that the way in which personal beliefs were defined is accountable for the fact that descriptive beliefs proved significant in the Elek et al. (2006) study and not in the present study. To examine

descriptive norms Elek et al. asked students about the substance use behaviors and attitudes of their classmates, friends, and parents. On the other hand, when examining descriptive norms in the present study, participants were asked what percentage of students they believed engaged in potentially harmful alcohol use behaviors. The decision to assess descriptive norms in this way was made for two reasons. First of all, the researcher wanted to help add clarity to the question of whether or not campus wide descriptive beliefs actually do account for any unique percentage of the variance in drinking behaviors. Secondly, this scale was believed to be easier to interpret and more objective than other possibilities, such as asking students whether or not they thought their friends were light or heavy drinkers. Therefore, the proximity of the norm reference group used to measure descriptive norms was closer in the Elek et al. (2006) study than it was in the current study.

It is possible that had we used a more proximal reference group in our own study, our results may have differed. Thombs et al. (2005) study on undergraduate alcohol abuse tends to support this assumption. When examining the effects of normative beliefs on undergraduate alcohol use, results indicated that the perceived drinking behaviors of typical students had no independent relationship on participants own self-reported alcohol use. On the other hand, the alcohol use behaviors of close friends were shown to significantly predict both the frequency and quantity of alcohol use rates. Unfortunately, the researchers did not assess either personal or injunctive norms. Future studies should attempt to determine whether or not descriptive beliefs based on proximal reference groups or "in-groups" may explain some of the unique variance seen in alcohol use

behaviors on college campuses that has not already been accounted for by either personal or injunctive beliefs.

As an additional note on the role that normative beliefs might play in determining college alcohol use, it is worth mentioning that the idea of personal normative beliefs as a variable unique from injunctive and descriptive norms is still a relatively new concept in academic research. Therefore, in order for us to avoid some of the confusion that has plagued research studies examining normative beliefs and actions thus far, a concrete operational definition for a personal normative belief should be agreed on by the academic community as soon as possible. However, before this can occur, future research efforts should attempt to discover what factors actually do contribute to shaping an individual's personal normative belief for a given situation. Areas to consider include actual observed actions taken by role models, thoughts and opinions of friends and relatives, laws and regulations of the individual's community, and wider cultural perceptions of what actions can generally be considered right and wrong.

Finally, the finding presented here support past studies that have suggested that neither injunctive nor descriptive beliefs play a role in influencing college drinking behaviors. Therefore, while the results of the current study do not support the opinions of other researchers who have suggested that we discontinue examining the relationship between normative beliefs and drinking altogether (Spark et al., 2005), they do suggest that we should consider moving away from examining a possible link between injunctive and descriptive norms and drinking behaviors and instead turn our attention to examining the link between personal norms and drinking behavior.

The Role of Religion

Going back to the original regression model proposed by the researcher, it was hypothesized that general religiosity would account for the second largest proportion of the variance seen in college drinking behavior after having already factored in normative beliefs. This hypothesis was based on the findings of the Ford and Kadushin (2002) study which indicated that being well integrated into a religious community seemed to play a larger role in minimizing risk of alcohol dependence than did the actual alcohol related beliefs and doctrine of the particular religious community that an individual belonged to.

One possible explanation comes from Rowatt and Schmitt's (2003) study on religious orientation and sexual experience. They suggested that engaging in sexually liberating experiences could counteract previously held religious based beliefs about what sexual behaviors are considered either right or wrong. However, these religious beliefs did seem to prevent individuals from engaging in these activities in the first place. For example, a significant correlation was found between being highly intrinsically religious and having never had sex. Therefore, something unpredictable had to happen in order to influence these highly religious people to engage in a sexually liberating act in the first place.

 It is possible that the same phenomenon might occur in regards to alcohol consumption as well. However, the social pressure placed on students to begin drinking may lessen the protective effects of long held religious beliefs. Therefore students who begin drinking due to social pressure may come to minimize previously held religious beliefs that kept them from drinking in the past, while still continuing to view themselves

as a religious person and continuing to engage in a number of behaviors associated with religion, such as attending church.

The lack of any association might also be due to differences in the current sample compared to previous samples studied. For example, results from one study showed that participants who identified as being atheist reported significantly higher drinking rates than did participants who identified belonging to an established religious tradition (Patock-Peckham et al., 1998). Results from this prior study also showed that conservative Protestants were less likely to consume alcohol than other religious groups. The results from the current study showed no significant difference in alcohol use rates across religions. However, the rates do show a trend for Protestants. Furthermore, past studies have suggested that certain religious groups may drink more than others due to differences in neuroticism, either caused by stricter religious doctrines (Catholics, Patock-Peckham et al., 1998), or existential anxiety (atheist, Ford & Kadushin, 2002). Results from the current study did not indicate any significant differences in levels of neuroticism across religious groups.

Finally, the fact that none of the religious variables were found to be significant predictors of alcohol use behaviors may possibly be attributable to the particular religious climate at the time data for this study was collected. Current hotly debate topics center around the issue of capital punishment, abortion, divorce rates, and sexual orientation. Therefore, it is unlikely that many of the participants were intimately familiar the particular religious views of their denomination. This topic may simply have not been discussed during religious services and other religious oriented events.

Personality Factors

The effects that personality might have on drinking behaviors was examined in this study mainly due to the fact that past studies had shown a correlation between the religious variables included in this study and certain personality factors (e.g. Paunonen, 2003). Therefore, after having already noted that are religious variables failed to be significant predictors of alcohol use behaviors, it is not surprising to find that personality factors also appear to play no major role in predicting alcohol use in undergraduate students.

While extraversion and openness proved to be significant factors in the analyses above, their own unique contributions are not believed to play a large part in one's final decision of whether or not to consume alcohol. For instance, extraversion was shown to account for 8.2% of the variance in total number of drinks consumed during a typical drinking week for students ages 18 and 19. However, extraversion did not prove to be a significant factor in any of the other regression analyses. Therefore, this finding is likely accounted for by the fact extraverted individuals are more likely to attend social occasions during their first year of school where alcohol will be available. However, it is unlikely that they drink more per each social occasion than do more introverted students.

Openness was shown to account for 3.0% of the variance in total number of drinks consumed during an average drinking week during the analysis examining drinkers only. However, this factor dropped out of the model when examining college students as a whole. This finding could possibly be explained by the fact that more open students could be more likely to engage in new activities in college that include drinking alcohol, such as going to socials and playing drinking games. However, it is unlikely that

examining this factor will produce any findings that help significantly reduce rates of alcohol consumption on college campuses. Therefore, future studies are unlikely to benefit from continuing to examine possible relationships between personality factors and drinking.

Limitations

Limitations of this study include the fact that it relied on a sample of college students from the south-central region of the United States. Therefore, results may not generalize to other areas of the country. Sample size was also an issue. Although the sample size was relatively large, n = 140, the large number of independent variables entered into the data analysis calls for an ideal sample size of approximate 210 participants. Furthermore, the study also relied on self-report data. Participants may not be entirely truthful when completing self-report surveys, due to forgetfulness, fatigue, or intentional attempts to mislead. Another limitation was that the questions designed to measure normative beliefs were constructed by the researcher. Therefore, results may had differed had normative beliefs been assessed with alternative items. Finally, this study relied on a number of multivariate regressions. Therefore it is difficult to make causal interpretations from this data.

Implications for Future Studies

The results of the current study indicated that and individual's personal belief was the only variable found to consistently account for a large unique percentage of the variance in alcohol use behaviors. This finding has two important implications. First of all, future studies should attempt to discover what factors go into the development of a personal belief. Secondly, this finding supports the viewpoint put forth by other theorist

that we should discontinue efforts to link injunctive and descriptive norms to actual situational outcomes (Azjen, 1991; Sparks et al., 1995).

The study also found that neither religion nor personality factors influence alcohol use decision making. Therefore, it may be wise to discontinue efforts to link these variables together. Finally, in each regression model conducted during this study, no more than one-third of the variance in alcohol use behaviors was accounted for by the predictor variables examined in this study. Therefore, if we hope to reduce alcohol abuse rates at college campuses in the future, additional factors should be explored.

One possible area of exploration is the age at which individuals begin to form their opinions on alcohol use. Dunleavy (2008) reported that past behavior accounted for over 60% of the variance seen in college alcohol use rates. Furthermore, Elek et al. (2003) reported that in one sample, over 20% of 7th grade students had tried an illicit substance, and that their parents had the greatest influence on their views on substance use. Therefore, by the time students reach college, their views on alcohol may have been in place for a number of years, and may be very difficult to change at this stage.

Results from Cialdini et al. (1991) also suggest that the salience of norm salience may play an important role in behavior. In their study on littering, participants were less likely to litter in a clean environment. However, they were more likely to litter after having seen a confederate throw trash on the floor. Therefore signs posted around campuses showing the potential implications of drinking may help to reduce drinking rates if they are displayed in areas where drinking commonly occurs.

Table 1

Studies Identifying Predictor Variables of Alcohol Use

Study	Predictor Variables	Dependent Variables
Day-Cameron et al. (2005)	Descriptive norms	Alcohol consumption
Dunleavy (2008)	Subjective norms	Intent to get drunk
Elek, Miller-Day & Hecht, (2006)	Descriptive norms, injunctive norms, personal norms	Substance abuse
Ford & Kadushin (2002)	Religious affiliation, religiosity, race	Risk of alcohol dependence
Larimer et al. (2004)	Descriptive norms, injunctive norms	Alcohol consumption
Osberg et al. (2010)	Five-factor traits	Drinking motives
Park et al., (2009)	Descriptive norms, injunctive norms	Intent to limit drinking
Patock-Peckham et al. (1998)	Religious orientation, religious affiliation	Drinking behaviors
Paunonen, (2003)	Five-factor traits	Alcohol consumption
Thombs et al., (2005)	Descriptive norms	Drinking frequency, drinking quantity

Table 2

Descriptive Statistics for Alcohol Use by Gender

	Total Drinks During Average Week		Total Hours During Average Week		Total Drinks During Heavy Week		Total Hours During Heavy Week	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Male	9.97	10.74	6.56	5.93	17.61	20.08	9.00	8.62
Female	4.63	6.13	4.56	5.69	7.55	10.27	6.20	7.01

Male n = 44, Female n = 115

Table 3

Correlations Between Measures

Measure	Gender	Personal Beliefs	Injunctive Beliefs	Descriptive Beliefs	General Religiosity	Intrinsic Religiosity	Extrinsic Religiosity	Extraversion	Openness	Conscientiousness	Agreeableness	Neuroticism	Average Week Drink Total	Average Week Hours Total	Heavy Week Drink Total	Heavy Week Hours Total
Gender	1	-.302**	-.238**	-.140	.266**	.185*	.105	.033	-.09 2	.059	.041	.245	-.299**	-.155	-.315**	-.166*
Personal Beliefs	-.302**	1	.659**	.066	-.214**	-.206**	-.040	.083	-.041	-.012	-.092	-.087	.562**	.504**	.507**	.477**
Injunctive Beliefs	-.238**	.659**	1	.076	-.265**	-.204**	.050	.006	-.130	-.107	-.100	-.054	.432**	.440**	.347**	.355**
Descriptive Beliefs	-.140	.066	.076	1	.071	.047	-.118	.073	-.041	-.026	-.095	.140	.062	.049	.030	.045
General Religiosity	.266**	-.214**	-.265**	.071	1	.720**	-.014	.029	-.005	.062	.233**	.035	-.058	-.102	-.043	-.095
Intrinsic Religiosity	.185*	-.206**	-.204**	.047	.720**	1	.266**	.061	.054	.063	.165*	-.111	-.079	-.109	-.152	-.204
Extrinsic Religiosity	.105	-.040	.050	-.118	-.014	.266**	1	-.035	-.071	-.016	.012	-.057	-.061	.017	-.176*	-.100
Extraversion	.033	.083	.006	.073	.029	.061	-.035	1	.321**	.354**	.225**	-.039	.128	.143	.125	.177*
Openness	-.092	-.041	-.130	-.041	-.005	.054	-.071	.321**	1	.291**	.172*	.195*	-.093	-.114	-.035	-.035
Conscientiousness	.059	-.012	-.107	-.026	.062	.063	-.016	.354**	.291**	1	.470**	.048	-.020	-.032	-.003	-.019
Agreeableness	.041	-.092	-.100	-.095	.233**	.165*	.012	.225**	.172*	.470**	1	-.029	-.030	.029	-.031	-.031
Neuroticism	.245	-.087	-.054	.140	.035	-.111	-.057	-.039	.195*	.048	-.029	1	-.031	-.039	-.059	-.057
Average Week Drink Total	-.299**	562**	.432**	.062	-.058	-.079	-.061	.128	-.093	-.020	-.030	-.031	1	.777**	.864**	.718**
Average Week Hours Total	-.155	.504**	.440**	.049	-.102	-.109	.017	.143	-.114	-.032	.029	-.039	.777**	1	.638**	.760**
Heavy Week Drink Total	-.315**	.507**	347**	030	-.043	-.152	-.176*	.125	-.035	-.003	-.031	-.059	.864**	.638**	1	.814**
Heavy Week Hours Total	-.166*	.477**	.355**	.045	-.095	-.204	-.100	177*	-.035	-.019	-.031	-.057	.718**	.760**	.814**	1

Table 4

Descriptive Statistics for Alcohol Use by Religion

	Total Drinks During Average Week		Total Hours During Average Week		Total Drinks During Heavy Week		Total Hours During Heavy Week	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Atheist/Agnostic	4.71	6.56	3.98	5.04	8.52	11.39	5.81	6.10
Catholic	6.30	7.21	5.38	5.54	11.43	12.88	7.71	7.49
Protestant	9.92	12.98	7.83	7.24	15.50	21.05	8.06	7.07
Nondenominational Christian	4.66	5.87	4.37	5.24	7.48	10.65	6.43	7.56
Other	5.31	6.22	3.25	3.36	12.13	14.54	6.81	6.43

Atheist/agnostic n = 21, Catholic n = 40, Protestant n = 24, Nondenominational Christian n = 51, Other n = 8

Table 5

Descriptive Statistics for Personality Factors by Religion

	Extraversion		Openness		Conscientiousness		Agreeableness		Neuroticism	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Atheist/Agnostic	26.38	7.55	39.71	5.98	34.00	5.61	31.57	5.60	22.61	5.85
Catholic	28.75	5.81	36.85	5.68	34.45	5.21	36.90	4.44	21.33	4.96
Protestant	27.96	6.00	36.04	3.58	34.38	6.09	36.75	4.63	22.33	6.11
Nondenominational Christian	27.69	5.99	35.65	5.88	32.57	4.92	34.78	4.87	21.57	4.79
Other	29.00	6.14	38.88	5.54	33.75	4.17	33.63	5.76	22.13	8.24

Atheist/agnostic n = 21, Catholic n = 40, Protestant n = 24, Nondenominational Christian n = 51, Other n = 8

Table 6

Component Loadings

	Loading
Component 1: Ethics	
Intrinsic Religiosity	.894
General Religiosity	.875
Descriptive Beliefs	.437
Component 2: Attitudes	
Personal Beliefs	.857
Injunctive Beliefs	.851
Component 3: Judgment	
Agreeableness	.702
Conscientiousness	.656
Neuroticism	-.623
Component 4: Outgoingness	
Openness	.761
Extraversion	.725
Component 5: Extrinsic Religiosity	
Extrinsic Religiosity	.959

APPENDIX

Appendix A

Demographic and Normative Beliefs Inventory

Please identify your gender: Male   Female

What is your religious affiliation? (ex. Christian: Lutheran)   _____

Please circle your age: 18   19   20   21   22   23   24

How would you describe your ethnicity? :   _____

In general, how important are religious or spiritual beliefs in your day to day life?

Extremely Important   Highly Important   Moderately Important   Mildly Important   Not at all Important

How often do you watch or listen to religious programs on TV or radio or listen to religious media?

Very Often   Often   An Average Amount of Time   Not Very Often   Never

When you do have problems or difficulties in your work, family, or personal life, how often do you seek spiritual comfort?

Very Often   Often   An Average Amount of Time   Not Very Often   Never

How acceptable do you feel it is for a college student to socially drink at least once each week?

Not at all acceptable   Somewhat Unacceptable   Neutral   Somewhat Acceptable   Completely Acceptable

How acceptable do you feel it is for a college student to drink until intoxicated at least once a week?

Not at all acceptable   Somewhat Unacceptable   Neutral   Somewhat Acceptable   Completely Acceptable

How acceptable do you feel it is for a college student to drink until blackout at least once each week?

Not at all acceptable   Somewhat Unacceptable   Neutral   Somewhat Acceptable   Completely Acceptable

How acceptable do you feel it is for a college student to miss class as a result of alcohol consumption?

Not at all acceptable   Somewhat Unacceptable   Neutral   Somewhat Acceptable   Completely Acceptable

How acceptable do you feel it is for a college student to miss work at least as a result of alcohol consumption?

Not at all acceptable   Somewhat Unacceptable   Neutral   Somewhat Acceptable   Completely Acceptable

How upset would your closest friend be if he or she found out that you drink alcohol at least once each week?

Extremely Upset   Highly Upset   Moderately Upset   Mildly Upset   Not at all upset

How upset would your closest friend be if they found out you drink until intoxicated at least once each week?

Extremely Upset   Highly Upset   Moderately Upset   Mildly Upset   Not at all upset

How upset would your closest friend be if they found out you drink until blackout at least once each week?

Extremely Upset   Highly Upset   Moderately Upset   Mildly Upset   Not at all upset

How upset would your closest friend be if they found out you missed a class as a result of alcohol consumption?

Extremely Upset   Highly Upset   Moderately Upset   Mildly Upset   Not at all upset

How upset would your closest friend be if they found out you missed work as a result of alcohol consumption?

Extremely Upset   Highly Upset   Moderately Upset   Mildly Upset   Not at all upset

What percentage of college students do you believe socially drink at least once per week?

1-20%   21-40%   41-60%   61-80%   81-100%

What percentage of college students do you think drink until the point of intoxication at least once each week?

1-20%   21-40%   41-60%   61-80%   81-100%

What percentage of college students do you think drink to the point of blackout at least once each week?

1-20%   21-40%   41-60%   61-80%   81-100%

What percentage of college students miss at least one class each month as a result of alcohol consumption?

1-20%   21-40%   41-60%   61-80%   81-100%

What percentage of college students miss at least one day of work each week as a result of alcohol consumption?

1-20%   21-40%   41-60%   61-80%   81-100%

Appendix B

Big-Five Inventory

How I am in general

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

1 Disagree Strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly

I am someone who…

1. _____ Is talkative

2. _____ Tends to find fault with others

3. _____ Does a thorough job

4. _____ Is depressed, blue

5. _____ Is original, comes up with new ideas

6. _____ Is reserved

7. _____ Is helpful and unselfish with others

8. _____ Can be somewhat careless

9. _____ Is relaxed, handles stress well.

10. _____ Is curious about many different things

11. _____ Is full of energy

12. _____ Starts quarrels with others

13. _____ Is a reliable worker

14. _____ Can be tense

15. _____ Is ingenious, a deep thinker

16. _____ Generates a lot of enthusiasm

17. _____ Has a forgiving nature

18. _____ Tends to be disorganized

19. _____ Worries a lot

20. _____ Has an active imagination

21. _____ Tends to be quiet

22. _____ Is generally trusting

23. _____ Tends to be lazy

24. _____ Is emotionally stable, not easily upset

25. _____ Is inventive

26. _____ Has an assertive personality

27. _____ Can be cold and aloof

28. _____ Perseveres until the task is finished

29. _____ Can be moody

30. _____ Values artistic, aesthetic experiences

31. _____ Is sometimes shy, inhibited

32. _____ Is considerate and kind to almost everyone

33. _____ Does things efficiently

34. _____ Remains calm in tense situations

35. _____ Prefers work that is routine

36. _____ Is outgoing, sociable

37. _____ Is sometimes rude to others

38. _____ Makes plans and follows through with them

39. _____ Gets nervous easily

40. _____ Likes to reflect, play with ideas

41. _____ Has few artistic interests

42. _____ Likes to cooperate with others

43. _____ Is easily distracted

44. _____ Is sophisticated in art, music, or literature

Religious Orientation Scale

Religious Orientation Scale (ROS)

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

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1. Although I believe in my religion, I feel there are many more important things in my life.
2. It doesn't matter so much what I believe so long as I lead a moral life.
3. The primary purpose of prayer is to gain relief and protection.
4. The church is most important as a place to formulate good social relationships.
5. What religion offers me most is comfort when sorrows and misfortune strike.
6. I pray chiefly because I have been taught to pray.
7. It is more important for me to spend periods of time in private religious thought and meditation.
8. If not prevented by unavoidable circumstances, I attend church.
9. I try hard to carry my religion over into all my other dealings in life.
10. A primary reason for my interest in religion is that my church is a congenial social activity.
11. Occasionally I find it necessary to compromise my religious beliefs in order to protect my social and economic well-being.
12. The prayers I say when I am alone carry as much meaning and personal emotion as those said by me during services.
13. Quite often I have been keenly aware of the presence of God or the Divine Being.
14. I read literature about my faith (or church).
15. One reason for my being a church member is that such membership helps to establish a person in the community.
16. If I were to join a church group I would prefer to join a Bible study group rather than a social fellowship.
17. The purpose of prayer is to secure a happy and peaceful life.
18. My religious beliefs are really what lie behind my whole approach to life.
19. Religion is especially important because it answers many questions about the meaning of life.
20. Religion helps to keep my life balanced and steady in exactly the same way as my citizenship, friendships, and other memberships do.

21. Although I am a religious person I refuse to let religious considerations influence my everyday affairs.

Extrinsic (sub) scale 1,2,3,4,5,6,10,11,15,17,20,21 Score_____

Intrinsic (sub) scale 7,8,9,12,13,14,16,18,19 Score____

Daily Drinking Questionnaire-Revised

DDQ-R (Daily Drinking Questionnaire-Revised)

Gender: Male_____ Female_____ **Height** _____' _____ '' **Weight_____** lbs.
(Feet) (Inches)

INSTRUCTIONS FOR RECORDING DRINKING DURING A TYPICAL WEEK

IN THE CALENDAR BELOW, PLEASE FILL-IN YOUR DRINKING RATE AND TIME DRINKING DURING A **TYPICAL WEEK** IN THE LAST **30 DAYS.**

First, think of a *typical week* in the last *30 days you.* (Where did you live? What were your regular weekly activities? Where you working or going to school? Etc.) Try to remember as accurately as you can, *how much* and for *how long* you *typically drank* in a week during that one month period?

For each day of the week in the calendar below, fill in the **number of standard drinks typically consumed on that day** in the upper box and the **typical number of hours you drank** that day in the lower box.

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of *Drinks*							
Number of *Hours Drinking*							

INSTRUCTIONS FOR RECORDING DRINKING FOR YOUR HEAVIEST DRINKING WEEK

IN THE CALENDAR BELOW, PLEASE FILL-IN YOUR DRINKING RATE AND TIME DRINKING DURING YOUR **HEAVIEST DRINKING WEEK** IN THE LAST **30 DAYS.**

First, think of your *heaviest drinking week* in the last *30 days*. (Where did you live? What were your regular weekly activities? Where you working or going to school? Etc.) Try to remember as accurately as you can, *how much* and for *how long* did you drink during your *heaviest drinking week* in that one month period?

For each day of the week in the calendar below, fill in the **number of standard drinks consumed**

on that day in the upper box and the **number of hours you drank** that day in the lower box.

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of *Drinks*							
Number of *Hours Drinking*							

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VITA

James R. Sliwinski Jr. was born in Toledo, Ohio on October 10, 1984, the son of Cindy L. Williams and James R. Sliwinski Sr. After graduating from high school in June of 2003, he entered the College of Wooster where he majored in psychology and minored in religious studies. His honors include being named on the Dean's List from the Spring of 2005 to the Fall of 2007, receiving a grade of honors on his senior independent study project, and being inducted into Psi Chi. He graduated cum laude in December of 2007 with departmental hours. In August, 2009, he entered the Graduate College of Texas State University-San Marcos to study Health Psychology.

Permanent Address: 1601 E. Slaughter Ln. # 278

Austin, Texas 78747

Email Address: jsliwin03@gmail.com

This thesis was typed by James R. Sliwinski Jr.