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THE INFLUENCE OF RELIGIOSITY ON RISKY PATTERNS OF DRUG USAGE AND SEXUAL PRACTICES IN UNDERAGE UNDERGRADUATE STUDENTS

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THE INFLUENCE OF RELIGIOSITY ON RISKY PATTERNS OF DRUG USAGE
AND SEXUAL PRACTICES IN UNDERAGE UNDERGRADUATE STUDENTS

THESIS

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

By

Hannah B. Prassel

Advisor: Dr. Charles Carlson, Professor of Clinical Psychology

Lexington, Kentucky

2016

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ABSTRACT

THE INFLUENCE OF RELIGIOSITY ON RISKY PATTERNS OF DRUG
USAGE AND SEXUAL PRACTICES IN UNDERAGE UNDERGRADUATE
STUDENTS

High-risk behaviors such as illicit drug usage and risky sexual practices have been increasing over the years among underage college students. Research has indicated that religious beliefs and religious behaviors interact to predict risky alcohol use in underage college students, with students having higher religious beliefs but lower religious behaviors being the most at risk. The current study hypothesized that this interaction would predict risky drug usage and sexual practices in underage college students in the same way as it does unsafe alcohol use. Underage students (N=211) at the University of Kentucky completed surveys online. Results indicated that religious beliefs and religious behaviors interacted to predict number of drugs tried, drug consumption frequency, risky sexual practices in the past three months, and lifetime number of sexual partners, with those students having higher religious beliefs but lower religious behaviors being the most at risk. Religious behaviors negatively predicted current number of sexual partners. Overall findings indicate that the group of students with higher religious beliefs but lower religious behaviors most at risk for alcohol use are also more likely to engage in risky drug usage and sexual practices. Future research is needed to explore the mechanisms leading to these outcomes.

Keywords: Religiosity, high-risk behaviors, college students.

Hannah B. Prassel

October 28, 2016

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CHAPTER ONE: INTRODUCTION

High-risk behaviors such as illegal drug use and unsafe sexual practices pose a problem for many college students. Researchers are currently seeking an understanding of what factors influence these behaviors in order to implement preventive interventions. Recently, the roles of religious beliefs and behaviors have gained increasing attention (Brechting & Carlson, 2015) as potential factors contributing to illegal drug use and unsafe sexual practices.

Drug use

Specifically, illegal drug use among college students is a concern, as 36% of college students reported some type of drug use in the past year (2012) when queried (Dennhardt & Murphy, 2013). According to a more recent study, this percentage rose to 51% (Johnston, O'Mailey, Bachman, Schulenberg, & Miech, 2014). In 2012, the one-year prevalence rate of marijuana use among college students was 31.3–33.2%, and the one-year prevalence rate of other illegal drugs was 11.0–16.8% (Dennhardt & Murphy, 2013). More recently, approximately 36% of college students reported having used marijuana (the most commonly used illicit drug among college students) in the last year (Johnston et al., 2014), whereas 11% of college students reported using Adderall (the second most commonly used illicit drug among college students) in the last year (Johnston et al., 2014). Given these percentages of college student drug usage, there is growing concern about the welfare of undergraduate students. The current study contributes to research on college student drug usage by investigating factors that are linked to drug usage in this population.

Sexual practices

In addition to risky patterns of drug usage, higher-risk sexual practices are common in the college population where 33% of undergraduates have had sex with 2-5 people (Caico, 2014), 31% of students engage in sexual intercourse one to two times a week (Caico, 2014), and only 4 out of 10 undergraduates always use condoms during vaginal sex (Buhi, Marhefka, & Hoban, 2010). Latent profile analyses have identified having high numbers of sexual partners, a high frequency of engaging in sex, and a low rate of condom use as “risky” sexual behaviors that could lead to unintended pregnancy and/or acquisition of disease (Beadnell et al., 2005). Thus, based on the problematic consequences of risky sexual behaviors, such high-risk behaviors in the underage college student population also need to be addressed. The current study seeks to uncover factors that are associated with risky sexual behaviors in underage college students in order to help develop a better understanding of what contributes to and protects against such behaviors.

Religiosity as a Protective Factor

Researchers have found that religiosity serves as a protective factor against risky behaviors in a variety of domains (e.g., Burris, Smith, & Carlson, 2009; Salas-Wright, Vaughn, & Maynard, 2015). Religiosity is a complex, multidimensional construct that has been defined in different ways. Some characterize religiosity as consisting of religious affiliation, level of religious service attendance, and significance of religion in one’s personal life (Palomar, Kiang, & Halkitis, 2014). Others propose the more general definition of involvement with a religious community and dedication to a system of belief/knowledge (Clayton-Jones, Haglund, Belknap, Schaefer, & Thompson, 2016).

Still others have identified religiosity profiles among emerging adults (ages 18-23): “publicly and privately disengaged”, “low public and private religiosity”, “moderate public and private religiosity”, and “publicly and privately devoted.” (Salas-Wright et al., 2015). Thus, religiosity is a construct that can be understood in different ways.

When considering how exactly religiosity may serve as a protective factor against high-risk behaviors, several potential explanations exist. First, religiosity may influence risky behaviors by virtue of the fact that religiosity and healthy life behaviors (such as engaging in safe sex and eating healthily) are linked together, perhaps due to a sense of responsibility for taking care of one’s self (Rew, Wong, Torres, & Howell, 2007). Thus, religious individuals may forgo risky behaviors that lead to increased disease risk, such as unprotected sex and use of drugs with physical side effects. Also, many religious systems specifically prohibit premarital and extramarital sex (Koenig, 2001), as well as illegal practices such as illicit drug use (Benda, Pope, & Kelleher, 2006). Thus, religiosity may be associated with reductions in high-risk behaviors.

Several studies have investigated whether religiosity does indeed act as a protective factor against risky behaviors. Burriss and colleagues (2009) found that religiosity (defined as having religious beliefs supported by religious behaviors) was associated with reduced numbers of lifetime sexual partners and vaginal sex frequency in a sample of university students. Palomar, Kiang, and Halkitis (2014) found that religiosity (defined as religious affiliation, level of religious service attendance, and significance of religion in one’s personal life) serves as a protective factor against illegal drug use, though its effect may grow smaller when considering exposure to other drug

users. Thus, support exists for religiosity's ability to protect against certain high-risk drug usage and sexual behaviors.

Despite findings concerning the protective nature of religiosity, recent studies provide evidence that different combinations of religious beliefs and religious behaviors (rather than just religiosity itself) seem to predict risk in different ways. On the one hand, religious beliefs indicate one's level of belief in God and/or a moral system. On the other hand, religious behaviors indicate actions that align with religious doctrines, such as praying and attending religious services. Brechting and colleagues (2010) and Cole, Carlson, and Keller (under review) found that students with higher religious beliefs unsupported by religious behaviors were most at risk for heavy underage drinking—even more so than their peers with both lower religious beliefs and lower religious behaviors. Though research has not yet explored in detail the characteristics of this high risk group, such a group of students seemingly hold beliefs in God and say they ascribe to a moral system—perhaps stemming from the values of their parents. However, this group of students may not engage in religious behaviors such as attending services and praying, perhaps because of a desire to try different behaviors than the ones they grew up with while living with parents. Thus, such a group of students may experience dissonance between their beliefs and behaviors. In sum, then, different combinations of religious beliefs and religious behaviors may predict risk more accurately than religiosity as a whole.

Hypotheses

In light of the findings discussed above, the current study hypothesized that religious behaviors would moderate the relationship between religious beliefs and high-

risk drug usage as well as the relationship between religious beliefs and risky sexual practices. Specifically, the current study predicted that college students with higher religious beliefs but fewer religious behaviors would report more risky drug usage and risky sexual behaviors than their peers, just as this group of students reported more risky alcohol use than their peers (Brechting et al., 2010; Cole et. al., under review).

CHAPTER TWO: METHOD

Participants

Two hundred and eleven college students (ages 18 to 20) in beginning psychology courses at The University of Kentucky participated in this study. The sample was 70% female, and 36.5% of the sample was involved in Greek life. The sample was 74.9% Caucasian (with 14.2% African American, 2.8% Asian, 2.8% Hispanic/Latino, .9% Native Hawaiian/Pacific Islander, and 4.3% other or unknown) and 61.6% freshman. The mean age of the sample was 18.97 years ($SD=.739$).

Measures

The current study chose to analyze data on risky drug use and sexual practices taken from a larger data set involving a number of other variables related to high-risk behaviors in underage college students. Only measures assessing the variables of interest in the current study will be described here. Information on measures regarding the other variables have been discussed in a previous manuscript (Cole et al., under review).

Demographic Information. Participants were asked to report their sex, ethnicity, age, current year in school, marital status, and extracurricular activity involvement in the last year.

Religiosity Scales

The Faith Maturity Scale (short-form; Benson, Donahue, & Erikson, 1993). The study assessed levels of religious beliefs with a 12-item scale focusing on levels of morality/values and reported relationship with God. Participants were asked to rate each item on a scale of one (“never true”) to seven (“always true”). The scale included such items as “I seek out opportunities to help me grow spiritually” and “I have a real sense

that God is guiding me.” The short-form version of this scale was derived from the original version of the scale (Benson et al., 1993). A study of 207 adults from two churches in California found, by means of a factor analysis, that this scale consists of a “personal” factor and a “social” factor (Ji, 2004). This study found the coefficient alphas of these two scale components to be 0.88 and 0.77 respectively (Ji, 2004).

Religious Behaviors. To assess amount of religious behaviors, the study used two items concerning frequency of prayer and frequency of religious service attendance. Participants were asked to respond to the first item (“How often do you attend religious services?”) on a scale of one (“Never”) to four (“About once a week or more”). Participants responded to the second item (“How often do you pray?”) on a scale of one (“Never”) to five (“Several times a day”). Participants’ scores on these two items were converted to Z-scores and then summed, so that the measure would not be more heavily weighted towards the item with higher number options (i.e., the prayer item). Although this method of scoring these items has not been found in previous studies, a study examining these same two items scored on a similar scale found the past re-test reliability of these single items to be 0.85 across an 11-week period in a sample of college students (Dollinger & Malmquist, 2009).

Risky Behavior Scales

Subset of the World Health Organization’s Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST V. 3.0): The study used a twenty-item scale assessing lifetime number of substances tried and three month drug consumption frequency. Participants were asked to indicate “Yes” or “No” to ever having tried a variety of substances (e.g., cannabis, cocaine, etc.), and to report on a scale of zero

(“Never”) to four (“Daily or Almost Daily”) how often they have used different substances in the past three months. This test was found to have good coefficient alphas (ranging from 0.68-0.88) in a sample of adolescent primary care patients (Gryczynski, et al., 2015).

High-Risk Sexual Behavior. A five-item scale was administered to assess level of engagement in risky sexual practices. Participants were asked to indicate how many sexual partners (both vaginal and oral) they had in the past three months, and how many times they had sex with and without a condom (vaginal and oral) in the past three months. The study combined these variables to form a variable consisting of risky sexual practices carried out in the past three months. Participants were also asked to note the number of sexual partners (both vaginal and oral) they had thus far in their lifetime on a scale of zero (“None”) to six (“13+”). Finally, participants reported whether or not they had sex (vaginal and oral) in the past three months, and how many sexual partners they currently had on a scale of zero (“0”) to five (“5 or more”). Each question distinguished between male and female partners. The study selected these specific items for use due to the model of Beadnell and colleagues (2005), which proposes that having high numbers of sex partners, a high frequency of engaging in sex, and a low rate of condom use constitutes risky sexual practices. The three-month time frame of recall of sexual behaviors was shown to be reliable in a sample of homosexual men (Kauth, St. Lawrence, & Kelly, 1991).

Procedure

This study was reviewed and approved by the Institutional Review Board of the University of Kentucky. In 2014, participants in beginning psychology courses at a major

southeastern public university were asked to complete a survey online for course credit. Participants could complete an alternative assignment if they wished. A link to these questionnaires in the form of an online survey was given to participants. Before completing this survey, participants were provided with an Informed Consent form, after which they were given the option to either agree or disagree to complete the questionnaires. Following completion of the online survey, participants were provided with a debriefing form. Participant confidentiality was maintained through participants being identified by subject number only rather than by other identifying information. Participants were treated in accordance with the American Psychological Association's ethical standards.

Analyses

To analyze this data set, the current study used tests of moderation, aligning with the strategies for multiple regression analysis presented by Aiken and West (1991). Specifically, the study used a Poisson loglinear regression analysis to determine if religious behaviors moderated the relationship between religious beliefs and risky drug use, and between religious beliefs and both lifetime and current number of sexual partners. This type of analysis was chosen due to all of these high-risk variables being zero-inflated, i.e., a high proportion of study participants reported having used no drugs at all or not having had any sexual partners. Religious beliefs and behaviors (which were both Z-scored) were entered as factors, as well as any covariates being controlled for (discussed specifically in the results section). The study assessed the regression coefficients for the religious beliefs, religious behaviors, and interaction terms. When

significant interactions were found, the study probed these interactions with an Excel utility (Dawson, n.d.).

When assessing high-risk sexual behaviors in the past three months, the study used a two-step hierarchical regression ($\alpha=.05$) to determine if religious behaviors moderated the relationship between religious beliefs and risky sexual behaviors. Religious beliefs, religious behaviors (which were both Z-scored), and any covariates being controlled for (discussed specifically in the results section) were entered in step one of the hierarchical regression model, and the interaction of religious beliefs and behaviors was entered in the second step. The study assessed changes in model fit from model one to model two (i.e., delta R-squared) for significance, as well as the regression coefficients for the religious beliefs, religious behaviors, and interaction terms. When the current findings demonstrated significant beliefs/behaviors interactions, the interactions were probed using Preacher's Rweb program (Preacher, Curran, & Bauer, 2010). The regression lines for models possessing significant interactions were plotted in order to see if the simple slopes of these lines were significantly different from zero.

Finally, the study conducted one-way ANOVAs to determine if scores on the religiosity and high-risk behavior measures varied based on demographic characteristics of study participants. Specifically, the study assessed potential differences based on gender, ethnicity, Greek life membership, year in college, and age.

CHAPTER THREE: RESULTS

Validity Checks

The current study analyzed data from a larger data set for which validity checks had already been conducted (Cole et al., under review). These validity checks resulted in the data of 77 of the original participants being withdrawn from the analyses. Reasons for the removal of data included participants not being in the appropriate age range of 18-20, completing less than half of the survey questions, or taking exceedingly long times or exceedingly short times to complete the survey. Thus, the current study only analyzed the data of the 211 participants who passed the rigorous data checks.

Descriptive characteristics

The means and standard deviations of the primary variables of interest can be seen in Table 1. Overall, the sample had a moderate score on the religious beliefs measure and a moderately high score on the religious behaviors measure. In regards to the high-risk variables, overall participants had relatively low scores on both the drug usage scales and the risky sex behavior scales.

To begin these analyses, the current study investigated whether demographic characteristics may serve as covariates in predicting the high-risk behavior variables. Males had greater numbers of oral sex partners ($M=1.97$, $SD=1.47$, $p<.01$) than females ($M=1.35$, $SD=.87$, $p<.01$) and reported more drug consumption frequency ($M=4.41$, $SD=3.94$, $p<.05$) than females ($M=3.21$, $SD=2.71$, $p<.05$). Those participating in Greek life reported higher numbers of lifetime sex partners ($M=4.29$, $SD=3.03$, $p<.05$) than those not involved in Greek life ($M=3.39$, $SD=3.09$, $p<.05$). However, non-Greek life members reported having more instances of oral sex without a condom ($M=2.61$, $SD=1.96$, $p<.05$) than Greek life members ($M=1.78$, $SD=1.63$, $p<.05$).

In addition to the high-risk variables, the current study also looked to see if the above-mentioned demographic characteristics were significantly associated with the religiosity variables (i.e., the predictor variables of the study). There were no significant differences in religiosity levels among different genders, ethnicities, or ages (p 's > .05). There were also no significant differences in religiosity based on year in college or participation in Greek life (p 's > .05).

Based on these findings concerning demographic characteristics, gender was controlled for when examining three-month drug consumption frequency, gender and Greek life membership when examining risky sexual practices in the past three months, and Greek life membership when examining lifetime number of sexual partners. In sum, the current study controlled for different demographic characteristics based on the high-risk variable being evaluated.

Drug use

Both of the drug use variables in the study were zero-inflated. Specifically, 13.8% of the sample reported having never tried any drugs in their lifetime, and 18.8% of the sample reported having never used any drugs in the past three months.

The first hypothesis of the current study proposed that religious behaviors would moderate the relationship between religious beliefs and high-risk drug use in underage college students. Results of Poisson regression analyses indicated that religious behaviors negatively predicted number of drugs tried in the lifetime, $B = -.162$, $p < .01$, whereas religious beliefs did not predict number of drugs tried, $B = -.012$, $p = .878$. Most notably, the interaction between religious beliefs and religious behaviors predicted number of drugs tried, $B = -.089$, $p < .01$ (Figure 1). Specifically, at lower levels of behaviors, beliefs

positively predicted number of drugs tried, $B=.257, p<.05$. Conversely, at higher levels of behaviors, beliefs negatively predicted number of drugs tried, $B= -.280, p<.05$.

Poisson regression analyses also indicated that religious behaviors negatively predicted three-month frequency of drug use, $B=-.171, p<.01$, whereas religious beliefs did not predict drug consumption frequency, $B=-.118, p=.058$. Most importantly, the interaction between religious beliefs and religious behaviors predicted three-month frequency of drug consumption, $B=-.116, p<.01$ (Figure 2). Specifically, at higher levels of behaviors, religious beliefs negatively predicted frequency of consumption, $B= -.350, p<.01$. However, at lower levels of behaviors, religious beliefs positively predicted frequency of consumption, $B=.230, p<.05$.

Sexual practices

The second hypothesis of the current study sought to investigate if religious behaviors would moderate the relationship between religious beliefs and risky sexual practices in underage college students. First, the current study looked at risky sexual practices (i.e., number of vaginal and oral partners and lack of condom use) in the past three months (Table 2). Religious behaviors negatively predicted risky sexual practices, $B= -1.376, \beta= -.310, p<.01$, whereas religious beliefs positively predicted such practices, $B=1.323, \beta=.159, p<.05$. Most importantly, the interaction of religious beliefs and religious behaviors predicted risky sexual practices in the past three months, $B=-.712, \beta=-.186, p<.01$ (Figure 3). Specifically, at lower levels of behaviors, beliefs positively predicted risky sexual practices, $B=2.75, p<.01$. Conversely, at higher levels of behaviors, beliefs negatively predicted risky sexual practices, $B=-0.10, p=.90$.

Both of the variables lifetime number of sexual partners and current number of sexual partners were zero-inflated. Specifically, 23.6% of the sample reported having never had any sexual partners in their lifetime, and 20.7% of the sample reported having no current sexual partners.

Poisson regression analyses indicated that religious behaviors negatively predicted lifetime number of partners, $B = -.182, p < .01$, whereas religious beliefs did not significantly predict number of partners, $B = .004, p = .944$. Most notably, the interaction term significantly predicted lifetime number of partners, $B = -.070, p < .01$ (Figure 4). Specifically, at lower levels of behaviors, beliefs positively predicted lifetime number of partners, $B = .144, p < .05$. Conversely, at higher levels of behaviors, beliefs negatively predicted lifetime number of partners, $B = -.207, p < .05$.

Finally, Poisson regression analyses indicated that religious behaviors negatively predicted number of current partners, $B = -.146, p < .05$. Neither religious beliefs, $B = .109, p = .405$, nor the interaction term, $B = -.039, p = .519$, significantly predicted number of partners.

Table 1

Means, Standard Deviations, and Minimum/Maximum Values of the Primary Variables

	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>	<i>S,Max.*</i>
Religious beliefs	206	50.13	17.75	12.00	84.00	84.00
Service attendance	211	2.65	1.00	1.00	4.00	4.00
Prayer	211	3.31	1.56	1.00	5.00	5.00
# of drugs tried	181	2.30	1.60	0.00	7.00	10.00
Drug consumption freq.	176	3.58	3.15	0.00	15.00	40.00
Sex practices freq.	109	6.77	4.22	0.00	24.00	48.00
Lifetime # partners	203	3.71	3.09	0.00	12.00	12.00
Current # partners	116	1.16	1.12	0.00	5.00	10.00

*Maximum score available for the given scale.

Table 2

Interaction Predicting Risky Sexual Practices

Step and measure	R^2	ΔR^2	df	B	β	p
Step 1	.762	.762	107			.00
Greek life				-.660	-.086	.089
Gender				.540	.065	.185
Religious beliefs				1.409	.169	.019
Religious behaviors				-1.112	-.130	.001
Step 2	.780	.018	102			.006
Greek life				-.826	-.107	.031
Gender				.546	.066	.166
Religious beliefs				1.323	.082	.023
Religious behaviors				-1.376	-.310	.000
Beliefs x Behaviors				-.712	-.186	.006

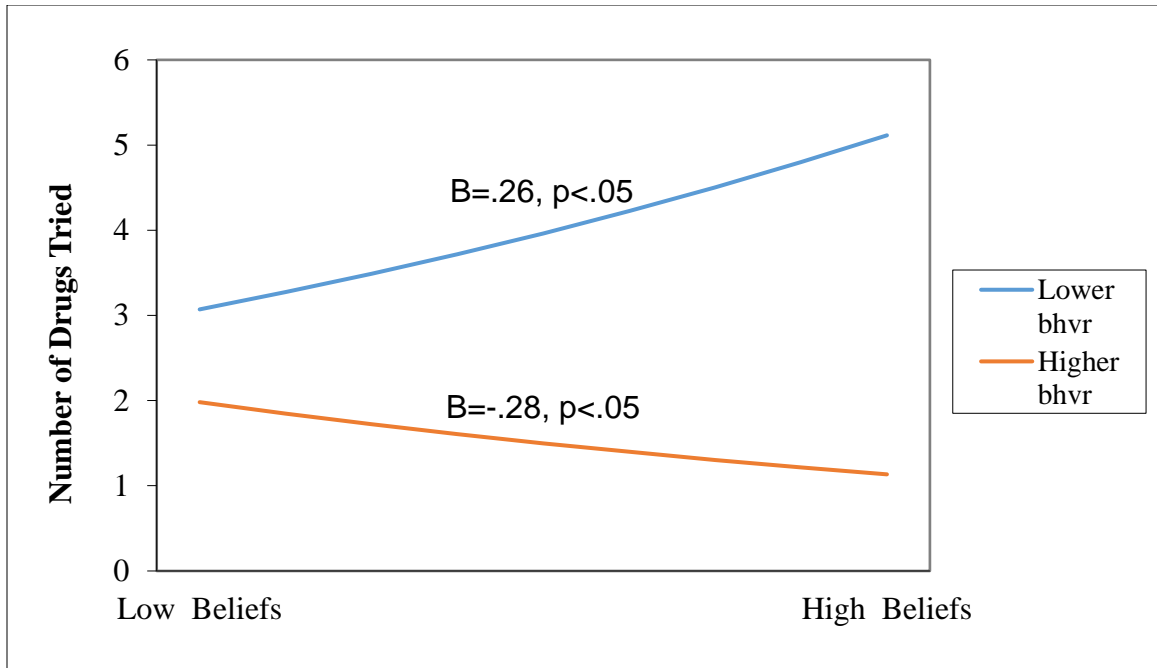


Figure 1. The relationship between religious beliefs and number of drugs tried in the lifetime.

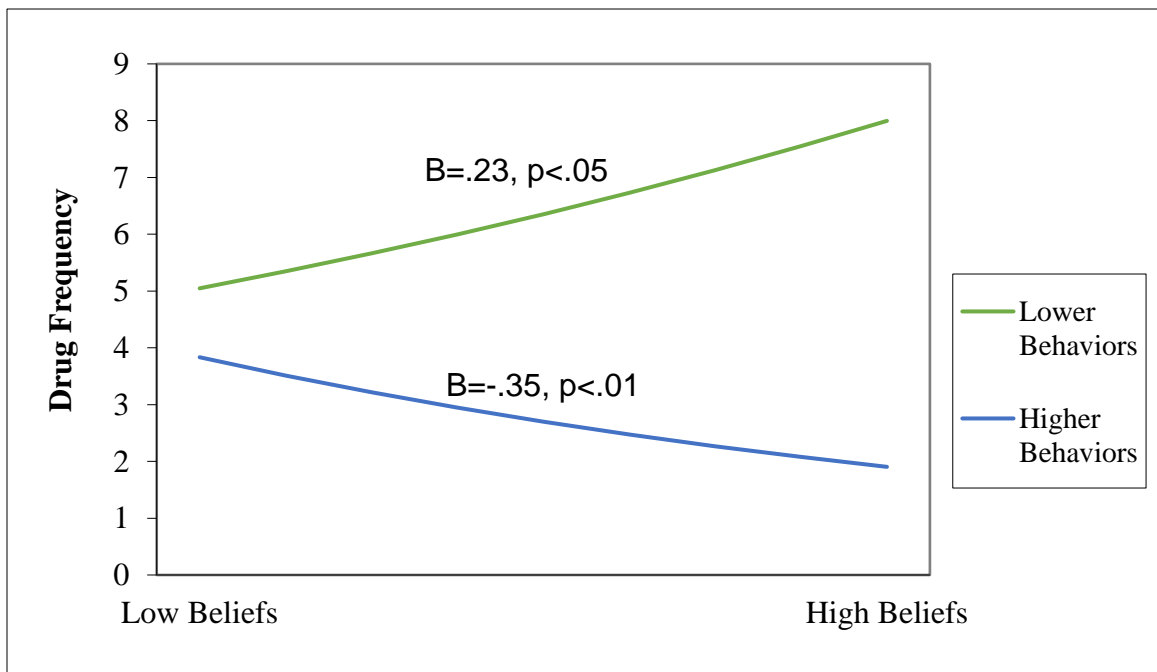


Figure 2. The relationship between religious beliefs and three month frequency of drug consumption

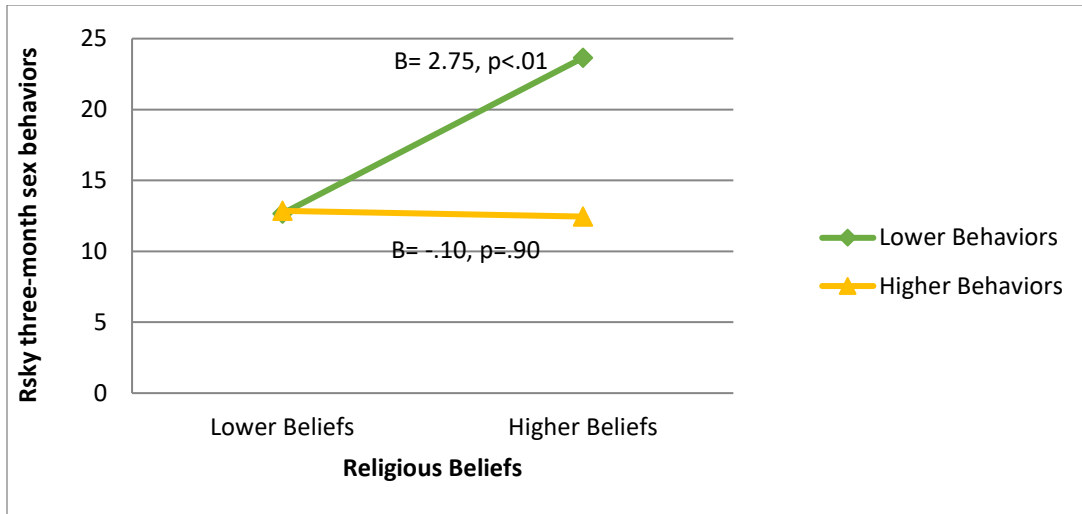


Figure 3. The relationship between religious beliefs and risky sexual practices in the past three months.

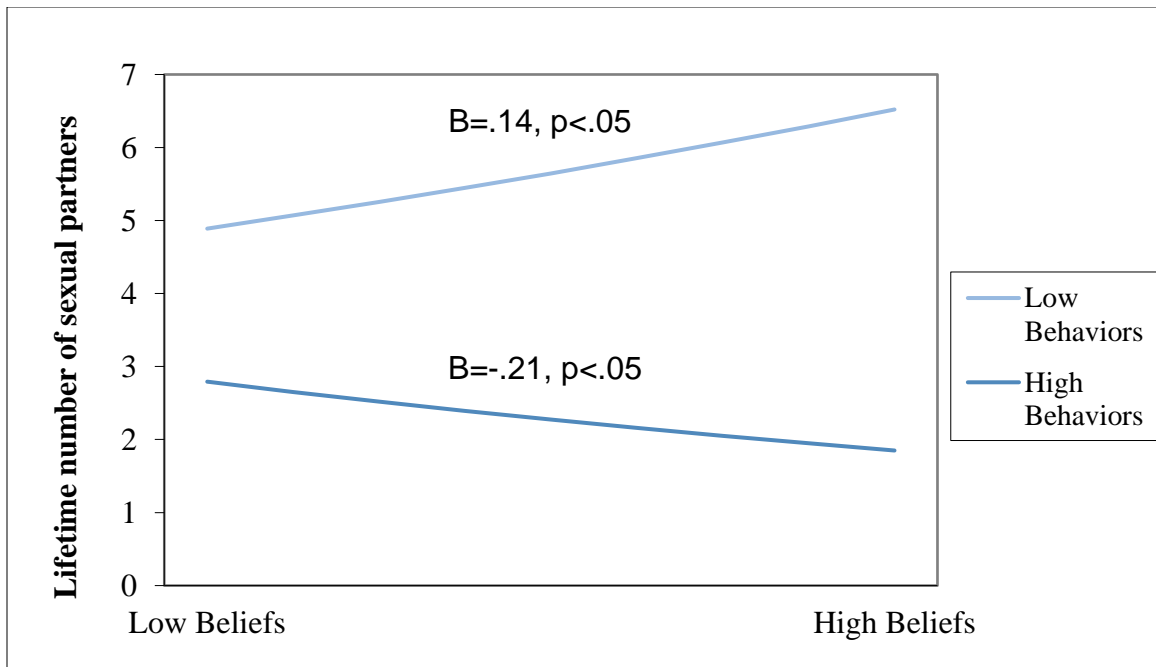


Figure 4. The relationship between religious beliefs and lifetime number of sexual partners.

CHAPTER FOUR: DISCUSSION

Overall Findings

Due to high levels of drug usage (e.g., Dennhardt & Murphy, 2013) and participation in risky sexual practices (e.g., Caico, 2014) in the college student population, there is a great need for research that identifies factors associated with these behaviors in college students. The current study looked specifically at the relationship between religiosity and such risky behaviors, as past research has indicated religiosity's ability to protect against certain high-risk behaviors (e.g., Burris et al., 2009; Palomar et al., 2014). Results indicated that underage college students with higher religious beliefs but lower religious behaviors were more at risk than their peers for trying more types of drugs, using those drugs more frequently, engaging in risky sexual practices (i.e., large numbers of partners and lack of condom use) in the past three months, and having greater numbers of sexual partners in their lifetimes. These findings build on previous studies which found this group of students to be more at risk for unsafe patterns of alcohol usage than their peers (Brechtling et al., 2010; Cole et al., under review). Additionally, students with both higher religious beliefs and higher religious behaviors are the most protected against risky drug use and sexual practices—a finding in accordance with those of previous studies examining alcohol use (Brechtling et al., 2010; Cole et al., under review). Thus, the current study extends previous findings on risky behaviors in underage college students from alcohol use to drug use and sexual practices, although the precise factors influencing these activities are not known presently.

One possible explanation for such findings is that college students with higher levels of religious beliefs and a lower frequency of religious behaviors may be freeing themselves of the constraints associated with their pre-college experiences (Brechtling et

al., 2010; Cole et al., under review). These students may choose to use drugs and engage in sexual practices that they did not have the chance to use/engage in while living at home with parents. Furthermore, though there are no data as of yet that speak to this issue, students from religious backgrounds where drug use and sex outside of marriage were considered “wrong” may not know how to engage in such practices with strategies to manage safety issues like their peers might use who may have more life experiences to draw from. Regardless of the reasons for the current study’s findings, students with higher religious beliefs unsupported by religious behaviors appear to be particularly at risk for problematic patterns of drug usage and sexual practices.

On the other end of the risk spectrum, students who ascribe to religious belief systems and back up such beliefs with consistent religious practices seem to be the most protected from engaging in risky activities. Such individuals may avoid such activities due to the potential unhealthy consequences of such behaviors (Rew et al., 2007).

Another possibility is that these individuals are highly sensitive to rules and behavioral proscriptions, causing them to abstain from unlawful drug use (Benda et al., 2006) and from sex outside of marriage (Koenig, 2001). Moreover, it could also be that students who engage in religious practices consistent with their belief systems find themselves in supportive peer groups and social settings where the likelihood for engaging in high risk behaviors is minimized (Oetting & Beauvais, 1987). In sum, students with both higher religious beliefs and higher religious behaviors seem to be the least at risk for engaging in high levels of drug usage and risky sexual practices.

In contrast to the current study’s findings involving drug use and two of the risky sexual behavior variables, the interaction of beliefs and behaviors did not predict current

number of sexual partners. Specifically, students with higher levels of religious behaviors (irrespective of religious beliefs) tend to have fewer numbers of current sexual partners than their peers with lower levels of behaviors. Such a finding could be due to the fact that, in the first few years of college, the temptation to have sexual relations with multiple individuals is particularly strong given the opportunities to meet many new people (Lefkowitz, 2005), the general social mores in the college setting for having multiple sex partners (Lefkowitz, 2005), and the perceived low risks associated with sexual activity (Adefuye et al., 2009). Thus, unless students are motivated to follow the prohibition of most religious systems to stay away from premarital and extramarital sex (Koenig, 2001)—a prohibition that would preclude having more than one sexual partner at a time—students may disregard this prohibition. Therefore, beliefs themselves may have little to do with students' current numbers of sexual partners, and students may only follow religious prohibitions to confine sex to marriage when particularly committed to following the rules of a particular religious group (Burriss et al., 2009).

Limitations

The current study has several limitations that should be considered when interpreting its results. First, ethnic minority groups, males, and Greek life members were underrepresented in the sample in proportion to Caucasians, females, and non-Greek life members. Given that past studies have found significant differences among high-risk behaviors based on such demographic characteristics (e.g., Beadnell et al., 2005; McCabe et al., 2007), the lack of study participants identifying as members of ethnic minorities, males, and members of Greek life could be problematic. Also, the sample had low levels of drug usage and engagement in sexual practices compared to recent statistics on college

student drug use (e.g., Dennhardt & Murphy, 2013; Caico, 2014). Thus one potential limitation of the current study is that its sample may not be fully representative of the underage college student population.

A second potential limitation of the current study is its cross-sectional rather than longitudinal design. The results of such a design represent likely relationships that are not to be construed as causal. Even though religious variables are linked to high-risk behaviors in the present data, it cannot be determined whether the religious variables influenced the high-risk behaviors. Thus, the results suggest the importance of exploring these issues with research designs that enable causal inference in order to clarify whether there is a causal link between religious beliefs/behaviors and risky practices.

Future Directions

In order to address the limitations discussed previously, future research in the area of religiosity and risky behaviors in the underage college student population should investigate these variables in a sample that is more representative of the underage college student population as a whole. It may be useful to attempt to replicate this study across different kinds of college populations (e.g., private liberal arts colleges, public universities in different geographic regions, etc.). It may also be useful to see if the current study's results replicate in a sample of young adults who are not attending college. Such studies could help make clear if the current study's results apply to the general college student population only, or to the young adult population as a whole.

Future studies should also employ a longitudinal framework. Specifically, such studies could measure the religiosity levels of students just prior to entering college, and then follow these students for the course of several years to see what kinds of risky

behaviors these students engage in. In such studies, it would be useful to measure perceived parental values so as to assess how much a student's reported religious beliefs stems from familial factors. Such future studies could enable more conclusive statements to be made about the effect of religiosity on high-risk drug usage and sexual practices,

Additionally, future studies should examine the potential mechanisms associated with the findings of the current study. Careful investigations need to determine why students with higher beliefs/lower behaviors are most at risk for certain risky behaviors (e.g., drug use) but not for others (e.g., lifetime number of sexual partners). Such studies should look for potential mediators of the relationship between beliefs/behaviors and risky behaviors. Potential mediators could include support of religious group, behaviors of peer group, student perception of risky behaviors (e.g., as forbidden, wrong, exciting, etc.), level of safety knowledge, or affective components of engaging in the behavior. The explanations provided by such studies will help better identify students at risk for certain patterns of drug usage and risky sexual behaviors, and help in the development of strategies to minimize such risky behaviors.

Future studies also may benefit from modifying the religiosity measures used in the current study. It may be useful to better differentiate between items on the Faith Maturity Scale assessing actual beliefs/values (e.g., "I feel God's presence in my relationships with other people") and those items that may tap more into behaviors (e.g., "I help others with their religious questions and struggles"). It may also prove useful to expand the religious behaviors measure to include items such as time spent reading Scriptures or listening to religious music. The revision of the religiosity measures could

provide more clarity about the distinctions between the constructs of religious beliefs and religious behaviors.

Finally, as information from systematic studies of the factors influencing risk behavior in the high beliefs/low behaviors group emerge, intervention programs targeting this group can be developed. Such a program could encourage students to evaluate their belief systems and their reasons for not supporting them with behaviors. At the very least, this group might benefit from targeted information and educational strategies for minimizing risks when engaging in drug use and sexual practices. Thus, future studies should investigate ways to implement intervention programs to help these students avoid the negative outcomes stemming from risky practices.

In conclusion, the current study provides a unique perspective on the relationship between religiosity and high-risk patterns of drug usage and risky sexual behaviors in underage college students. The current study extends the work of previous studies (Brechtling et al., 2010; Cole et al., under review) by demonstrating the group of students with higher religious beliefs but lower religious behaviors to be at greater risk than their peers for risky drug usage and sexual practices, rather than just risky alcohol use. Future studies should investigate why this group of students is more at risk than their peers for engaging in such behaviors, and should differentiate more precisely between religious beliefs and religious behaviors.

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PRESENTATIONS

Prassel, H.B., Cole, H.A., & Carlson, C.R. (2016, April). *The Influence of Religiosity on Risky Sexual Practices and Drug Use*. Poster presented at the Annual Spring Meeting of the Kentucky Psychological Association.

Prassel, H.B., & Price, J.L. (2015, April). *How the socially anxious relate to others: The relationship between social anxiety and empathy*. Poster presented at an honors' student poster session on the campus of Georgetown College.

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