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by

Jana K. Tran

May 2013

ADULT SEXUAL ASSAULT AS A MODERATOR BETWEEN RELIGIOSITY AND SEXUAL RISK TAKING AMONG COLLEGE WOMEN

A Dissertation Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
Of the Requirements for the Degree

Doctor of Philosophy

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Approved by Dissertation Committee

_____
Dr. M. Nicole Coleman, Chairperson

_____
Dr. Tam K. Dao, Committee Member

_____
Dr. Consuelo Arbona, Committee Member

_____
Dr. Deleene Menefee, Committee Member

_____
Dr. Robert McPherson, Dean
College of Education

May 2013

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Abstract

Sexual risk taking among college women is a major public health concern, as it leads to negative health consequences, such as sexually transmitted diseases and unintended pregnancies (Centers for Disease Control & Prevention, 2010; Finer & Henshaw, 2006). Policy makers have become increasingly interested in collaborating with religious organizations to create faith-based education efforts to address these sexual health problems (Whitehead & Ooms, 1999). Religious teachings often endorse restrictive sexual scripts that exert social control on sexual behavior (Rotosky et al., 2003). However, findings regarding the relation of religiosity to sexual risk taking have been mixed within the college student population. One potential moderator that may help explain these inconsistencies is adult sexual assault (ASA), which has consistently been associated with increased engagement in sexual risk tasking. The purpose of the current study was to use archival data to examine ASA as a moderator of the relation of religiosity to sexual risk taking among college women, while controlling for social desirability bias and race.

Participants included 181 undergraduate women, with ages ranging from 18 to 44 years (M = 22.22, SD = 4.53). Regarding racial identification, 28.7% were European American/White, 20.4% were African American/Black, 20.4% were Asian American/Asian, 19.3% were Latino-a/Hispanic, 5.0% were bi-racial or multi-racial, and 6.1% reported "Other." Regarding religious affiliation, 37.6% were Catholic, 34.3% were Protestant, 8.4% reported other religious affiliations, 10.5% reported being Agnostic, and

4.4% reported being Atheist. A questionnaire collected a range of relevant demographic information, the Religious Commitment Inventory–10 (Worthington et al., 2003) measured religious commitment, the Sexual Experiences Survey - Short Form Victimization (Koss et al., 2007) measured ASA, and the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) measured social desirability.

As a preliminary analysis, MANOVAs were conducted to examine group differences on the dependent variables across socioeconomic status, marital status, dating status, and sexual orientation, the bivariate correlations of the variables were calculated, and an assessment of multicolinearity was performed.

The current study examined three main research questions: 1) to what extent religiosity is associated with the two sexual risk taking variables (i.e., sexual risk taking with uncommitted partners and risky sex acts), 2) to what extent ASA is associated with the two sexual risk taking variables, and 3) whether ASA moderates the relationship between religiosity and the two sexual risk taking variables.

Two separate hierarchical regression analyses were run and revealed that, after controlling for social desirability, race, and dating status, religiosity, adult sexual assault, and the interaction effect did not contribute a significant amount of unique variance to engagement in sexual risk taking with uncommitted partners. Asian American/Asian and Latino-a/Hispanic race contributed a significant amount of unique variance to this criterion. Results also indicated that dating status and adult sexual assault contributed unique variance to engagement in risky sex acts. Religiosity and the interaction between religiosity and adult sexual assault did not contribute unique variance to this criterion.

Implications of the findings regarding the relation of religiosity, adult sexual assault, and sexual risk taking among college women are discussed.

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Chapter I

Introduction

In the United States (US), the sexual health of college women is a major public health concern (Centers for Disease Control & Prevention, 2010). Approximately 19 million new cases of sexually transmitted diseases (STDs) occur each year. When compared to older adults, sexually active adolescents and young adults are at increased risk for contracting STDs. Estimates suggest that young people aged 15 to 24 acquire almost half of all new STDs. Additionally, almost half of all pregnancies in the US are unintended, with higher rates of unintended pregnancy among women aged 18 to 24 (Finer & Henshaw, 2006). Behaviors that place young women at risk for these negative health consequences are termed sexual risk taking and include early age at first intercourse, sex with multiple partners, frequent sexual intercourse, no or inconsistent use of condoms or other contraception methods, and sex while under the influence of alcohol or drugs (Beadnell et al., 2005; Eaton et al., 2008; Rotosky, Regenerus, & Wright, 2003; Turchik & Garske, 2009; Zaleski, Levey-Thors, & Schiaffino, 1998). The alarming rates of STDs and unintended pregnancies underscore the need to understand factors associated with sexual risk taking among college women. This line of research could contribute to the development and implementation of prevention and intervention programs aimed at decreasing the number of STDs and unintended pregnancies in this population (Turchik, Garske, Probst, & Irvin, 2010).

Policy makers and the general public have become increasingly interested in collaborating with religious organizations to create faith-based education efforts to address the abovementioned sexual health problems (Whitehead & Ooms, 1999).

According the socialization influence model, religiosity, which refers to "society-based beliefs and practices relating to God or a higher power commonly associated with a church or organized group" (Egbert, Mickley, & Coeling, 2004, p. 8) has a central role in shaping sexual behaviors (Rotosky, Wilcox, Wright, & Randall, 2004; Wallace & Williams, 1997). Religious teachings often endorse restrictive sexual scripts regarding the appropriateness and type of sexual activity permissible outside of marriage (Rotosky et al., 2003). Additionally, religious involvement alters social networks by providing a setting that fosters friendships with peers who hold more conservative views about sex (Glanville, Sikkink, & Hernandez, 2008). Thus, the socialization influence framework suggests that religiosity serves as a protective factor by decreasing engagement in sexual risk taking.

However, findings regarding the relation of religiosity to sexual risk taking have been mixed within the college student population. These inconsistencies are likely due to measurement issues (i.e., use of single-item measures). Furthermore, moderating variables that may help explain the inconsistent findings regarding the relation of religiosity to sexual risk taking have been relatively unexplored. One potential moderator is adult sexual assault (ASA), which has consistently been associated with increased engagement in sexual risk taking among women. The definition of ASA varies across studies. For the purposes of the current study, ASA was defined as rape (i.e., "vaginal, oral, or anal intercourse without consent by force or threat of force or when the victim was intoxicated"), attempted rape, sexual coercion (i.e., "sexual intercourse subsequent to use of verbal pressure or misuse of authority but no threats of force or actual physical force was used"), and unwanted sexual contact (i.e., "unwanted fondling or kissing that

did not involve attempted penetration subsequent to verbal pressure, misuse of authority, threats of harm, or actual physical force") since the age of 14 (Ullman, Najdowski, & Filipas, 2009, p. 373).

Resnick, Acierno, and Kilpatrick (1997) proposed a theoretical model that outlines the mechanisms underlying violent assault's (including ASA) impact on the risk of health problems among women. Within this model, sexual risk taking is considered an indirect negative health outcome of ASA. The association between sexual intercourse and rape causes survivors to regard sexual activity as aversive, leading to increased engagement in drug and alcohol use prior to sex as a coping strategy and thereby impairing their ability to practice safe sex. Furthermore, survivors of ASA may experience devaluation of their bodies, which may alter their previous sexual scripts and lead to increased engagement in sexual risk taking regardless of the survivor's level of religiosity.

The purpose of the current study was to examine adult sexual assault as a moderator between religiosity and sexual risk taking among college women. It was hypothesized that sexual risk taking will be negatively related to religiosity and positively related to ASA. It was also hypothesized that ASA will moderate the effects of religiosity on sexual risk taking, with the relation of religiosity to sexual risk taking being strong and negative among participants without ASA and less strong or nonexistent for participants with ASA.

Chapter II

Literature Review

This chapter will discuss the current empirical literature relevant to the abovementioned research hypotheses. The literature relating to religiosity and sexual risk taking will be discussed first, and then the literature relating to ASA and sexual risk taking will be discussed. Relative weaknesses of methodology in previous studies, which the current study expanded on, will also be highlighted in this section.

Religiosity and Sexual Risk Taking

Research has repeatedly shown that religiosity exerts a positive influence on young people. Among adolescents, greater religiosity is related to greater self-esteem, higher psychological functioning, and prosocial values and behavior (Ball, Armistead, & Austin, 2003; Donahue & Benson, 1995). Lower religiosity is related to delinquency, substance abuse, and suicide ideation and attempts (Donahue & Benson, 1995; Wills, Gibbons, Gerrard, Murry, & Brody, 2003). Religious involvement (i.e., religious service attendance) also positively predicts educational achievement and school retention among adolescents (Glanville et al., 2008). Among college students, religiosity is associated with college adjustment and confidence in one's ability to handle personal problems (Kneipp, Kelly, & Cyphers, 2009; Merrill, Read, & LeCheminant, 2009). Religiosity has also demonstrated an inverse relationship with drug and alcohol problems in a college student population (Strawser, Storch, Geffken, Killiany, & Baumeister, 2004). Thus, these findings suggest that religiosity promotes healthy behaviors and prevents risk behaviors.

According to the socialization influence model, the protective effects of religiosity should extend to sexual risk taking. This model postulates that religion is an

important socialization agent that operates independently and interdependently with other socialization influences (e.g., school, peers) to impact health outcomes (Wallace & Williams, 1997). For example, highly religious parents may enroll their children in religious schools and attempt to limit their children's friendships to those who share their religious beliefs.

Moreover, religious teachings often endorse restrictive sexual scripts that exert social control on sexual behavior (Rotosky et al., 2003). For example, conservative Protestants have developed an abstinence pledge movement, *True Love Waits*, in which adolescents promise to abstain from sex until marriage (Ueker, 2008). Religiosity serves as an internal motivator to abstain from sex, because adherents want to please God and honor their commitment to the pledge. Religiosity appears to influence sexual behavior through its associations with prohibitory sexual attitudes. Research supports this hypothesis, demonstrating that greater religiosity is related to more conservative attitudes toward sex, which are in turn associated with delayed coital debut and fewer sexual partners (Beckwith & Morrow, 2005; Simons, Burt, & Peterson, 2009).

Religiosity has consistently been found to serve as a protective factor against the negative health consequences of sexual risk taking. Among adolescents, greater religiosity is associated with (a) healthier sexual behaviors, (b) fewer sexual partners (Galvan, Collins, Kanouse, Pantoja, & Golinelli, 2007), (c) lower frequency of sexual intercourse (Scott, Munson, McMillen, & Ollie, 2006; Steinman & Zimmerman, 2004), (d) greater self-efficacy in turning down an opportunity of unsafe sex, and (e) greater self-efficacy in communicating with partners about sex and prevention of STDs, HIV, and pregnancy (McCree, Wingood, DiClemente, Davies, & Harrington, 2003). Among

married young adults, greater religiosity is associated with abstaining from premarital sex as well as with limiting premarital sex to a future spouse (Ueker, 2008).

However, findings regarding the relation of religiosity to sexual risk taking have been mixed within the college student population. Among college students, greater religiosity is associated with lower engagement in risky sexual behaviors, a lower lifetime number of sexual partners, and a lower frequency of vaginal sex (Burris, Smith, & Carlson, 2009; Zaleski et al., 1998). Inconsistent with these results, Zaleski and Schiaffino (2000) found that college students with high levels of religious identification are less likely to use condoms. Thus, although religiosity may protect against initiating sexual activity, it may serve as a risk factor for unsafe sex among college students who are already sexually active. Further examination of the relationship between religiosity and sexual risk taking among college students appears to be warranted.

The most salient difference across studies was the inconsistent assessment of religiosity and sexual risk taking. These constructs were often measured with a single item. For example, religiosity has been operationalized as salience of religion in one's everyday life, "What is the influence of religion on your daily life," (Simons et al., 2009, p. 473). In contrast, Burris et al. (2009) used the Religious Commitment Inventory–10 (RCI–10; Worthington et al., 2003), which has demonstrated good internal consistency (α = .88-.98). Assessing religiosity with a single-item measure can be reliable, valid, and viable (Abdel-Khalek, 2007). However, treating religiosity as multidimensional concept is more methodologically desirable (Gorsuch & McFarland, 1972).

Sexual risk taking has also been operationalized in various ways as aforementioned. For example, Burris et al. (2009, p. 284) measured number of sexual

partners with the item, "During your lifetime, with how many partners have you had vaginal and/or oral sex?" Although these single-item measures may be considered an aspect of sexual risk taking, each measure by itself is an invalid conceptualization of sexual risk taking in that this is a multidimensional construct that should not be measured by one item (Metzler, Noell, & Biglan, 1992). Although each item captures some of the variance in sexual risk taking, it does not in itself measure the construct (Beadnell et al., 2005).

In addition to these measurement issues, there may be important moderators of the relation of religiosity to sexual risk taking that may help explain the inconsistent findings previously discussed. One potential moderator is ASA, which has consistently demonstrated associations with increased engagement in sexual risk taking among women.

Adult Sexual Assault as a Moderator of Religiosity and Sexual Risk Taking

Several studies have documented the negative effects of ASA. Survivors are more likely to experience (a) psychological distress (Burnam et al., 1988), (b) major depressive episodes, (c) anxiety disorders (i.e., phobia, panic disorder, and obsessive-compulsive disorder; Elliot, Mok, & Briere, 2004; Faravelli, Giugni, Salvatori, & Ricca, 2004), (d) substance use disorders (i.e., alcohol and drug abuse or dependence; Elliot et al., 2004), (e) posttraumatic stress disorder (PTSD), (f) sexual disorders, and (g) eating disorders (Faravelli et al., 2004). Female college students who experienced ASA are more likely to endorse health-risk behaviors, including being in a physical fight with a romantic partner, driving after drinking alcohol, having serious suicide ideation, and smoking cigarettes (Brener, McMahon, Warren, & Douglas, 1999).

The relationship between ASA and sexual risk taking has not been commonly studied, as most research has focused on childhood sexual abuse (CSA). Senn, Carey and Vanable's (2008) review of the literature on the relation of CSA to subsequent sexual risk taking revealed a consistent association between CSA and sex trading, more sexual partners, and earlier coital debut. Such findings suggest that ASA may be a risk factor for STD acquisition and unintended pregnancy. Indeed, there is growing concern among researchers and practitioners that ASA may adversely affect women's sexual health (Campbell, Sefl, & Ahrens, 2004). Rape survivors are significantly more likely to have high levels of sexual risk taking, including multiple sexual partners, sex while under the influence of alcohol or drugs, and early age at first intercourse (Biglan, Noell, Ochs, Smolkowski, & Metzler, 1995; Brener et al., 1999). Women with a history of sexual trauma have an earlier initiation of voluntary sexual intercourse, have more pregnancies, become pregnant at an earlier age, have more sexual partners (lifetime and in the past year), and are more likely engage in sexual activity without knowing their partner's sexual history when compared with women without a history of sexual trauma (Lang, Rogers, Laffaye, Satz, Dresselhaus, & Stein, 2003). In fact, ASA has been found to mediate the relationship between CSA and sexual risk taking, suggesting that ASA may intensify the effects of early sexual abuse by increasing women's engagement in sexual risk taking (Parillo, Freeman, Collier, & Young, 2001; Randolph & Mosack, 2006).

The reasons behind this relationship between ASA and sexual risk taking are not well understood. It is certainly possible that women who tend to engage in risky sex place themselves in situations with a higher risk of sexual assault occurring (Biglan et al., 1995). Direct and indirect mechanisms may explain how ASA leads to sexual risk taking

(Brener et al., 1999). Forced sex may directly cause early coital debut. Additionally, according to Resnick et al.'s (1997) theoretical model, ASA indirectly increases women's risk of engaging in sexual risk taking by initiating, maintaining, or exacerbating the use of substances. Following ASA, survivors may become aversive to sexual activity due to its association to the assault. As such, they may use alcohol or drugs to cope with feelings of anxiety during sex, which impairs their ability to practice safe sex. Among female college students, drug and alcohol use is independently associated with having multiple sexual partners, and sex under the influence of alcohol independently predicts unprotected sex and multiple sexual partners (Caldeira, Arria, Zarrate, Vincent, Wish, & O'Grady, 2009).

In addition, survivors of ASA often experience distress, self-blame, and societal blame and suffer from a diminished self-image, viewing themselves as "damaged goods" (Campbell et al., 2004; Synovitz & Byrne, 2010). For highly religious survivors of ASA, this devaluation of their bodies may overwrite their previous restrictive sexual scripts, as they may no longer feel worthy of or capable of adhering to them. As such, the experience of ASA may lead to increased engagement in sexual risk taking regardless of the survivor's level of religiosity.

Purpose of the Study

The purpose of the current study was to use archival data to examine adult sexual assault as a moderator between religiosity and sexual risk taking among college women. The decision to focus on college women was based on the alarming prevalence of lifetime rape in this population. Approximately 20% of undergraduate women have experienced forced sexual intercourse (Brener et al., 1999), and approximately 35% have

been coerced through arguments to engage in sexual activity (Biglan et al., 1995). The current study expanded on previous research by using validated, multidimensional measures of religiosity and sexual risk taking measures. Moreover, subscales of the sexual risk taking measure were included in the analyses to gain a better understanding of these relationships. Sexual risk taking with uncommitted partners (i.e., engaging in risky sexual acts with partners that one was not in a relationship with, did not know well, and did not trust) and risky sex acts (e.g. vaginal or oral sex without a condom) were examined as separate factors of sexual risk taking.

Further, this study overcame the limitations of previous research by controlling for social desirability bias and race. Although social desirability was not related to sexual risk taking scores in previous research with college students (Turchik & Garske, 2009), the current study also included measures of religiosity and ASA. Items related to religiosity may elicit impression management and items related to ASA may elicit emotional distress. Indeed, social desirability is an issue that must be considered in any research on sexual risk taking (Turchik et al., 2010). The decision to control for race was based on past research suggesting that African Americans and Latino Americans engage in more sexual risk taking than their Caucasian counterparts. African American college students report more sexual partners than Latino Americans or Caucasians (Espinosa-Hernandez & Lefkowitz, 2009; Randolph, Torres, Gore-Felton, Lloyd, & McGarvey, 2009), which may be partly due to initiating sexual intercourse at an earlier age (Espinosa-Hernandez & Lefkowitz, 2009; Cavazos-Rehg et al., 2010). Use of oral contraceptives is lower among Latino American adolescent females (Santelli et al., 2000),

and condom use is lower among Latino American college students (Espinosa-Hernandez & Lefkowitz, 2009). Thus, these two variables were controlled for in the analyses.

Research Questions and Hypotheses

The current study investigated the following research questions with corresponding hypotheses:

(1) To what extent is religiosity related to engagement in (a) sexual risk taking with uncommitted partners and (b) risky sex acts? As predicted by the socialization influence model, it is hypothesized that inverse relationships will be found between religiosity and both forms of sexual risk taking.

(2) To what extent is ASA related to engagement in (a) sexual risk taking with uncommitted partners and (b) risky sex acts? Consistent with Resnick et al.'s (1997) theoretical model, significant positive relationships between ASA and both forms of sexual risk taking are predicted.

(3) Are the relationships between religiosity and engagement in (a) sexual risk taking with uncommitted partners and (b) risky sex acts moderated by ASA? It is hypothesized that ASA will moderate the effects of religiosity on both forms of sexual risk taking. That is, the relation of religiosity to sexual risk taking among participants without ASA will be statistically significant and negative, while the relation of religiosity to sexual risk taking among participants with ASA will be less strong or not significant.

Chapter III

Method

Participants

Participants included 181 undergraduate women attending a large public university from an archival data set collected by the current author. They were recruited from the university's web-based research management system, available to Psychology and Human Development and Family Studies undergraduate students. Of the total participants, ages ranged from 18 to 44 years (M = 22.22, SD = 4.53). Regarding racial identification, 28.7% were European American/White (N = 52), 20.4% were African American/Black (N = 37), 20.4% were Asian American/Asian (N = 37), 19.3% were Latino-a/Hispanic (N = 35), 5.0% were bi-racial or multi-racial (N = 9), and 6.1% reported "Other," indicating that the aforementioned categories did not appropriately fit their racial identification (N = 11). Regarding religious affiliation, 37.6% were Catholic (N = 68), 34.3% were Protestant (N = 62), 8.4% reported other religious affiliations, such as Muslim and Buddhist (N = 15), 10.5% reported being Agnostic (N = 19), and 4.4% reported being Atheist (N = 8). Regarding sexual orientation, 92.3% reported being heterosexual (N = 167), 4.4% reported being bisexual (N = 8), and 3.3% reported being homosexual (N = 6). Regarding marital status, 89.0% of the participants reported being single (N = 161), 7.2% reported being married (N = 13), and 2.8% reported being separated or divorced (N = 5). Thirty-eight percent reported that they were not dating anyone (N = 68), 27.6% reported that they were dating one or more people (N = 50), and 34.8% reported being in a long-term, monogamous relationship (N = 63). Forty-three

percent (*N* = 77) of the participants were survivors of adult sexual assault, with 19.3% (*N* = 35) endorsing an experience of completed rape.

Measures

Demographics questionnaire. A 21-item questionnaire was used to collect a range of relevant demographic information, such as participants' age, race, and sexual history. Some items were modified from Turchik and Garske's (2009) demographics questionnaire.

The Religious Commitment Inventory–10 (RCI–10; Worthington et al., 2003). The 10-item RCI-10 was used to measure religious commitment, defined as ''the degree to which a person adheres to his or her religious values, beliefs, and practices, and uses them in daily living'' (Worthington et al., 2003, p. 85). Participants rated their agreement with each item (e.g. "My religious beliefs lie behind my whole approach to life.") on a five-point response format ranging from (1) *not at all true of me* to (5) *totally true of me.* Higher scores reflect greater religious commitment. The RCI-10 full scale has demonstrated good internal consistency (α = .88-.98) and three-week and five-month test–retest reliability (*α* = 87 and .84, respectively), as well as convergent and discriminant validity (Worthington et al., 2003). The RCI-10 contains two subscales: (1) intrapersonal religious commitment, which consists of six items assessing largely cognitive manifestations of religious commitment, and (2) interpersonal religious commitment, which consists of four items assessing largely behavioral manifestations of religious commitment. In this sample, Cronbach's alphas were .96 for the full scale, .95 for the intrapersonal religious commitment subscale, and .90 for the interpersonal religious commitment subscale. These values are consistent with previous research that

has found Cronbach's alphas of .95 for the full scale, .92 for the intrapersonal religious commitment subscale, and .88 for the interpersonal religious commitment subscale (Worthington et al., 2003).

The Sexual Experiences Survey - Short Form Victimization (SES-SFV; Koss et al., 2007). The 10-item SES-SFW was used to measure ASA. Participants indicated the number of times (i.e., 0, 1, 2, or 3+) in the past 12 months and since the age 14 someone attempted or completed sexual contact and assault using various methods of coercion. The SES-SFV is an abbreviated form of the most recent revision of the Sexual Experiences Questionnaire (SES; Koss & Oros, 1982). The SES-SFV contains the same four subscales as the original SES: sexual contact, sexual coercion, attempted rape, and rape. The original SES has demonstrated adequate internal consistency (α = .74) and good test-retest reliability (α = .93; Koss & Gidyez, 1985). Cronbach's alpha for this sample was .90. A dichotomous variable was created to indicate the experience of ASA: (1) no experience of ASA and (2) survivor of ASA (i.e., sexual contact, attempted coercion, coercion, attempted rape, and/or rape).

The Sexual Risk Survey (SRS; Turchik & Garske, 2009). The 23-item SRS was used to measure of the frequency of sexual risk behaviors in the past six months. Participants responded to a broad range of sexual behaviors (e.g., ''How many times have you had vaginal intercourse without protection against pregnancy?''). Items were recoded into an ordinal variable, ranging from zero to four, with higher scores reflecting greater risk taking. The SRS has demonstrated good internal consistency (α = .88) and two-week test–retest reliability (α = .93), as well as convergent and discriminant validity (Turchik & Garske, 2009). The SRS contains five subscales: sexual risk taking with uncommitted

partners (α = .88), risky sex acts (α = .80), impulsive sexual behavior (α = .78), intent to engage in risky sexual behaviors (α = .89), and risky anal sex acts (α = .61; Turchik & Garske, 2009). In alignment with the purpose of the current study, only two of the subscales were included: (1) sexual risk taking with uncommitted partners, which describes risky sexual acts with partners that one was not in a relationship with, did not know well, and did not trust, and (2) risky sex acts, which describes risky sexual acts such as vaginal or oral sex without a condom and sex under the influence of substances. These subscales were chosen, because limiting sexual activity to a single, uninfected partner and the correct and consistent use of condoms are highly effective means of reducing the risk of unintended pregnancy and sexual transmission of STDs (Hoyle, Fejfar, & Miller, 2000). In this sample, Cronbach's alphas were .43 and .76 for the sexual risk taking with uncommitted partners and risky sex acts subscales, respectively.

The Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960). The 33-item MCSDS was used to measure social desirability, defined as "the need of subjects to obtain approval by responding in a culturally appropriate and acceptable manner" (Crowne & Marlowe, 1960, p. 353). The MCSDS has a true–false format, and each item is scored zero or one, with a total score range of zero to 33. Higher scores reflect greater social desirability. The MCSDS has demonstrated good internal consistency (α = .88) and one-month test–retest reliability (α = .89), as well as convergent and discriminant validity (Crowne & Marlowe, 1960). Cronbach's alpha for this sample was .77.

Procedures

Archival data collected by the current author was used for the analyses. The measures were made available to Psychology and Human Development and Family Studies undergraduate students through the university's web-based research management system during the Spring 2011 semester. Participants were self-selected and accessed the study online, where they provided informed consent and completed the measures. To control for order effects, measures were counterbalanced such that half of the participants received items pertaining to religiosity first and the other half received items pertaining to sexual behaviors and victimization first. Participants received research credit for their participation. In turn, they may have been awarded extra credit in eligible courses for their research credit.

Chapter IV

Results

Preliminary Analysis

Statistical analysis was performed using SPSS version 16.0. Preliminary examination of the data identified four apparent outliers demonstrating studentized residuals ranging from 3.09 to 4.17. An inspection of case indices reflecting the impact of individual observations on regression coefficients ("delta betas") indicated that no observations, including the four outliers, exerted excessive influence on the estimated coefficients. In addition, a sensitivity analysis in which the four outliers were temporarily dropped indicated that they did not have undue influence on the model R^2.

Visual inspection of a plot of the model residuals versus the predicted outcomes did not indicate any violations of the regression assumptions of correct fit or constant variance. However, some skewness in the plot suggested nonnormality of the residuals. The regression assumption of normality was not corrected by excluding the residual outliers from the analyses, because as previously stated, they did not exert excessive influence on the model R^2 or the slope. Furthermore, there were no conditions suggesting the possibility of a violation of the independence assumption, and the reliabilities of the independent variables were high enough to assume that all independent variables were known exactly.

A preliminary analysis was conducted to examine the bivariate correlations of the variables included in the study (See Table 1). A positive correlation was found between the sexual risk taking subscales, $r(179) = .43$, $p < .001$. ASA was positively correlated with sexual risk taking with uncommitted partners, $r(181) = .27$, $p < .001$, and risky sex

acts, r(179) = .25, $p < .01$. Religiosity was positively correlated with social desirability, r(172) = .23, $p < .01$, and negatively correlated with risky sex acts, r(170) = -.29, $p < .001$.

Multivariate analyses of variance were conducted to examine group differences across socioeconomic status, marital status, dating status, and sexual orientation on the means of the dependent variables. Results indicated significant multivariate effects for sexual risk taking with uncommitted partners and risky sex acts by dating status, Wilks' Lambda = .878, $F(4, 350) = 5.86$, $p < .001$, partial $\eta^2 = .06$ (See Table 2). Tests of between-subjects effects revealed significant univariate effects for risky sex acts by dating status, $F(2, 176) = 10.01$, $p < .001$, partial $\eta^2 = .10$. Post-hoc analysis using the Bonferonni's correction indicated that college women who were in a long-term, monogamous relationship ($M = 6.72$, $SD = 5.02$) engaged in significantly more risky sex acts than college women who were not dating anyone ($M = 3.07$, $SD = 4.44$; Table 2). No significant differences in the means of the dependent variables were found for socioeconomic status, marital status, or sexual orientation.

Primary Analysis

Two separate hierarchical regression analyses were used to examine the three research questions: (1) to what extent religiosity is associated with the two sexual risk taking variables (i.e., sexual risk taking with uncommitted partners and risky sex acts), (2) to what extent ASA is associated with the two sexual risk taking variables, and (3) whether ASA moderates the relationship between religiosity and the two sexual risk taking variables. Tables 3 and 4 contain results of the hierarchical multiple regression analyses with sexual risk taking with uncommitted partners and risky sex acts from the

SRS (Turchik & Garske, 2009) as the dependent variables. In each regression, the first step controlled for social desirability, race, and the variable revealed to significantly differ on the means of the dependent variables in the preliminary analyses (i.e., dating status). Religiosity and ASA were entered in the second step to test for main effects. In the third and final step, the interaction term between religiosity and ASA was entered to test the moderating effects of ASA in the relation of religiosity to the two sexual risk taking variables.

In examination of the first regression analysis (See Table 3), using sexual risk taking with uncommitted partners as the dependent variable, the overall model was significant, $R^2 = .13$, $F(1, 162) = 2.66$, $p < .01$, indicating that the combination of social desirability, race, dating status, religiosity, adult sexual assault, and the interaction between religiosity and adult sexual assault share 13% of variance in the criterion. Asian American/Asian ($\beta = -.17$) and Latino-a/Hispanic ($\beta = -.19$) race contributed a significant amount of unique variance to engagement in sexual risk taking with uncommitted partners. The β for religiosity, adult sexual assault, and the interaction effect were not statistically significant, indicating that these variables did not contribute unique variance to the criterion.

For risky sex acts, results of the second regression analysis (See Table 4) indicated that the overall model was significant, $R^2 = .27$, $F(1, 160) = 6.70$, $p < .001$. Thus, the combination of social desirability, race, dating status, religiosity, adult sexual assault, and the interaction between religiosity and adult sexual assault share 27% of variance in the engagement in risky sex acts. Dating status ($\beta = .29$) and adult sexual assault ($\beta = .39$) contributed unique variance to the criterion. The β for religiosity and the

interaction between religiosity and adult sexual assault were not statistically significant, indicating that these variables did not contribute unique variance to the engagement in risky sex acts.

Chapter V

Discussion

The purpose of the current study was to examine adult sexual assault as a moderator of the relation of religiosity to sexual risk taking among college women. The study expanded on previous research by using validated, multidimensional measures of religiosity and sexual risk taking measures, examining sexual risk taking with uncommitted partners and risky sex acts as separate factors of sexual risk taking, and controlling for social desirability bias and race.

Three primary research questions with corresponding hypotheses were proposed. It was hypothesized that sexual risk taking would be negatively related to religiosity and positively related to ASA. It was also hypothesized that ASA would moderate the effects of religiosity on sexual risk taking, with the relation of religiosity to sexual risk taking being strong and negative among participants without ASA and less strong or nonexistent for participants with ASA. These predictions were partially supported.

The first section of this discussion will focus on the results concerning the proposed research questions and hypotheses, the second section will consider the limitations of this study and offer suggestions for future research, and the third section will present the implications of this study's findings.

Discussion of Results

As religious individuals tend to subscribe to a more conservative view of the circumstances under which sexual behavior is acceptable, it was predicted that college women with higher levels of religious commitment would deem sex as reserved for marriage and refrain from engaging in sexual activity (Simons et al., 2009). However, the

findings of the current study indicated that religiosity was not a significant predictor of engagement in sexual risk taking with uncommitted partners or risky sex acts. Thus, college women's engagement in sexual risk taking does not appear to be influenced by their relative level of religious commitment.

As previously discussed, findings regarding the relation of religiosity to sexual risk taking have been mixed within the college student population. Although results of the current study seem to add to ambiguity of this field of research, a number of factors may explain why religious commitment was not found to be a significant predictor of sexual risk taking in this sample. First, dating status was controlled for in the primary analyses. Preliminary analyses revealed that college women who were dating one or more people engaged in significantly more risky sex acts than those who were not dating anyone. For those individuals who were not dating anyone, it is likely that they were not engaging in risky sexual acts (e.g., vaginal or oral sex without a condom) due to the lack of a sexual partner. Regardless of these individuals' current level of religious commitment, it may be that they were less risky simply because they had relatively fewer opportunities to engage in sexual behavior than those who were dating. Thus far, researchers have not considered the role of dating status in college women's engagement in sexual risk taking.

Another reason religious commitment may not have been a significant predictor of sexual risk taking in this sample is that as previously discussed, the current study also controlled for social desirability bias and race. Previous findings of a positive relationship between religiosity and sexual risk taking may have been confounded by participants' impression management and/or race effects. In fact, the effects of race on sexual risk

taking was supported in this study, as race was the only variable found to contribute to the variance in sexual risk taking with uncommitted partners. Asian American/Asian and Latino-a/Hispanic women were less likely to engage in risky sexual acts with partners that one was not in a relationship with, did not know well, and did not trust than their European American/White counterparts.

Additionally, the impact of religiosity in shaping women's sexual behavior may decrease during the college years; religious involvement tends to change during this period, with students becoming less religiously active during the first college year (Bryant, Choi, & Yasuno, 2003). Tran, Coleman, Dao, & Arbona (n.d.) found that the behavioral aspect of religiosity, interpersonal religious commitment, was predictive of engagement in risky sex acts. Thus, it appears that college students tend to spend less time participating in the activities of their religious organization and socializing with others of their religious faith, thereby decreasing their exposure to restrictive sexual scripts and relationships that encourage abstinence and/or condom use (Ueker, 2008).

Regarding the second research question, the current study found a positive relationship between ASA and engagement in risky sex acts. This finding expanded on previous research indicating that survivors of ASA are more likely to have high levels of sexual risk taking by demonstrating in what type of risky behaviors these college women engage (Biglan et al., 1995; Brener et al., 1999). College women who experienced some form of adult sexual assault, such as attempted rape or rape, were more likely to have vaginal or oral sex without a condom and sex under the influence of substances than those who had not experienced sexual assault as an adult.

Although this study cannot provide a definitive explanation for this relationship between ASA and sexual risk taking, the current findings support Resnick et al.'s (1997) assertion of indirect effects. As previously mentioned, the association between sexual intercourse and rape might cause survivors to regard sexual activity as aversive, leading to increased engagement in drug and alcohol use prior to sex and thereby impairing their ability to practice safe sex. Regardless of the possible explanations, this finding is concerning, because it suggests that in addition to increasing the risk for negative health consequences, survivors of ASA who engage in drug and alcohol use prior to sex may be at increased risk for sexual revictimization.

Lastly, the results of the current study revealed that ASA did not moderate the relation of religiosity to sexual risk taking. In other words, the strength and direction of the relation of religiosity and sexual risk taking is not associated to the level of ASA. Taken together, the results of the current study suggest that religiosity does not play an important role in shaping college women's sexual behavior. Instead, ASA is the key factor that determines whether college women will engage in sexual risk taking. Specifically, being a survivor of ASA heightens one's risk of engaging in risky sex acts.

Limitations and Future Research

Although the findings from this research add to the literature by using psychometrically sound measures, including subscales of sexual risk taking, and controlling for social desirability and race, there are some limitations. First, external validity is threatened, because all of the participants in this study were female; as such, these results may not generalize to college men. Moreover, the current study used a convenience sample of Psychology and Human Development and Family Studies

undergraduate women, which presents challenges in generalizing the findings to larger population of college women. Second, internal validity is threatened, because the use of self-report questionnaires may have led to the report of inaccurate information. Also, administering the questionnaires online allowed participants to access the study at the time and place of their discretion. Thus, controlling for environmental influences was not possible. It should also be noted that the sexual risk taking with uncommitted partners subscale demonstrated poor internal consistency ($\alpha = .43$) in this study. This discrepancy in Cronbach's alpha compared to previous studies may be due to the sample being solely comprised of females. This study's nonsignificant findings regarding this sexual risk taking variable may be a result of this limitation.

Attempts should also be made to address the limitations of this study by including a broader sample of college students in future research. Researchers should also investigate the impact of dating status on engagement in sexual risk taking. As previously mentioned, the current study's preliminary analyses revealed that college women who were dating one or more people engaged in significantly more risky sex acts, such as vaginal or oral sex without a condom, than those who were not dating anyone. Considering one's opportunity to engage in sexual behavior, as indicated by potential sexual partners, appears to be an important factor in this field of research.

For college women, ASA appears to be a risk factor that increases engagement in sexual risk taking. To further understand this relationship, future work should consider the role of alcohol and other drug use. Research has consistently shown that substance use is prevalent among college students. Approximately two of five college students are heavy drinkers, and use of alcohol, marijuana, and cocaine is higher among college

students than age-mates who do not attend college (O'Malley & Johnston, 2002). Substance use heightens the risk for having multiple sexual partners and engaging in unprotected sexual intercourse (Baskin-Sommers & Sommers, 2006). Exploring the impact of substance use on sexual risk taking among survivors of ASA may be especially important, because as previously discussed, they may use of drugs and alcohol to cope with the aversive nature of sexual activity.

Implications

An important implication of the current findings is in the development and implementation of intervention and prevention programming aimed at decreasing the prevalence of STDs and unintended pregnancies on college campuses. College women who are survivors of ASA can be identified as individuals who are at increased risk for STD acquisition and unintended pregnancy. The results of the current study will help researchers and practitioners understand the types of sexual risk taking that these college students engage in (i.e., risky sex acts, such as vaginal or oral sex without a condom and sex under the influence of substances), thereby allowing education efforts to be appropriately tailored to meet their specific needs. Further research is needed to provide more information to help develop and implement such prevention and intervention programs among college women.

Table 1

Means, Standard Deviations, and Intercorrelations for Predictor & Criterion Variables

	M	SD	1	2	3	4	5
1. Reli	24.73	11.88	--				
2. ASA	.43	.50	.04	--			
3. SRTUP	3.61	5.10	-.07	.27***	--		
4. RSA	4.83	4.85	-.29***	.25**	.43***	--	
5. SD	16.11	5.33	.23**	-.03	-.05	-.13	--

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

Reli = Religiosity; ASA = Adult Sexual Assault; SRTUP = Sexual Risk Taking with Uncommitted Partners; RSA = Risky Sex Acts; SD = Social Desirability.

Table 2

Multivariate and Univariate Analyses of Variance for Sexual Risk Taking with Uncommitted Partners and Risky Sex Acts

	Multivariate	*Univariate*	
Source	F^a	*SRTUP*[b]	*RSA*[b]
Socioeconomic Status	1.92	3.45	.05
Marital Status	1.14	.08	2.14
Dating Status	5.86***	.21	10.01***
Sexual Orientation	2.06	4.09	1.17

Note: Multivariate *F* ratios were generated from Wilks' Lambda.
a. Multivariate *df*= 2, 176.
b. Univariate *df*=1, 177.
* $p < .05$, ** $p < .01$, *** $p < .001$
SRTUP = Sexual Risk Taking with Uncommitted Partners; RSA = Risky Sex Acts

Table 3

Hierarchical Regression Analysis Summary for Religiosity and Adult Sexual Assault, Predicting Sexual Risk Taking with Uncommitted Partners

	Sexual Risk Taking with Uncommitted Partners		
Step/Predictor Measures	β	R^2	ΔR^2
Step 1		.06	
Social Desirability	.001		
African American/Black	.004		
Asian American/Asian	-.17*		
Latino-a/Hispanic	-.19*		
Other Race	-.09		
Dating Status	.02		
Step 2		.07	.01
Religiosity	-.17		
Step 3		.13**	.06**
Adult Sexual Assault	.14		
Step 4		.13**	.003
Religiosity X Adult Sexual Assault	.13		

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

Table 4

Hierarchical Regression Analysis Summary for Religiosity and Adult Sexual Assault, Predicting Risky Sex Acts

	Risky Sex Acts		
Step/Predictor Measures	β	R^2	ΔR^2
Step 1		.16***	
Social Desirability	-.06		
African American/Black	-.02		
Asian American/Asian	-.15		
Latino-a/Hispanic	-.07		
Other Race	.12		
Dating Status	.29***		
Step 2		.19***	.04**
Religiosity	-.18		
Step 3		.27***	.08***
Adult Sexual Assault	.39*		
Step 4		.27***	.003
Religiosity X Adult Sexual Assault	-.13		

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

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