ABSTRACT

Title:                          RELIGION, SEX, AND FAMILY: THE ROLE OF
                               FAMILY RELIGIOSITY AND SEX COMMUNICATION
                               IN EMERGING ADULTS' SEXUAL BEHAVIORS

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Religion plays an important role in many people's lives and can impact both physical and mental health. A growing body of research has examined potential links between religiosity and health behaviors and outcomes in adolescents and young adults, in particular adolescents' sexual risk behaviors. Consequences of sexual risk represent a major health concern in the United States, particularly among adolescents and young adults.  Risky sexual behavior is common among college students; campus "hook-up" culture promotes casual and unplanned sexual encounters (Burdette, Hill, Ellison, & Glenn, 2009; Grello, Welsh, & Harper, 2006), and students often perceive potentially risky sexual behaviors (including oral sex and anal sex) to be less intimate (and therefore more allowable) than sexual intercourse (Chambers, 2007; Kelly & Kalichman, 2002; H. Lyons, Manning, Giordano, & Longmore, 2013).

Parents have consistently been identified as the most important source of religious influence, both in childhood and adolescence, and into adulthood. Research also shows that parents can play an important role in adolescents' sexual health decision making through their parent-teen relationships, parenting practices, and communication about sex and sexual risk.

The current study of undergraduate students (n=608) extends the literature in order to improve our understanding of the relationships between multi-dimensional aspects of family religiosity and family sex communication and college students' religiosity, attitudes about sex, sexual activity, and sexual risk and protective behaviors. Based on social learning theory's principles of observation, communication, and social interaction, this study examined the ways in which college students' religiosity and attitudes about sex, and ultimately their sexual risk and protective behaviors, are associated with family modeling of religiosity and family communication about sex. Findings suggest that a higher degree of family religiosity is significantly associated with aspects of students' sexual activity and sexual risk, while more comprehensive family communication about sex is significantly associated with some aspects of students' sexual activity. Potential mediation of parental monitoring during high school and students' current sex attitudes is also explored.

RELIGION, SEX, AND FAMILY:

THE ROLE OF FAMILY RELIGIOSITY AND SEX COMMUNICATION IN

EMERGING ADULTS' SEXUAL BEHAVIORS

By

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**Chapter 1: Introduction**

Religion plays an important role in many people's lives and can impact both physical and mental health. In 2014, 86% of Americans reported believing in God or a higher power, and 80% of Americans classified religion as being 'very important' or 'fairly important' in their own lives (Gallup, 2016). Only 22.8% of Americans overall report being religiously unaffiliated, describing themselves as atheist, agnostic, or "nothing in particular." However, 36% of Americans ages 18-24 are religiously unaffiliated (Pew Research Center, 2015). From a sample of high school and college-aged youth, Ozorak (1989) found that a kind of religious polarization occurs in adolescence, with youth who are only moderately religious experiencing a decline in religious participation, while very religious youth may increase their religious participation. Further research suggests that youth are more likely to be involved in religion early in life, when they attend services and other religious activities with their parents, then experience a decline during adolescence as they distance themselves from their families and become more involved with their peers, and then increase religious involvement again when they begin to form their own families (Stolzenberg, Blair-Loy, & Waite, 1995; Uecker, Regnerus, & Vaaler, 2007).

A growing body of research has examined potential links between religiosity and health behaviors and outcomes in adolescents and young adults, in particular adolescents' sexual risk behaviors. Consequences of sexual risk represent a major health concern in the United States, particularly among adolescents and young adults. In 2015, the live birth rate for teen girls aged 15-19 was 22.3 births per 1,000 women in this age group (Martin, Hamilton, Osterman, Driscoll, & Mathews, 2017). Also in 2015, 41.2% of U.S.

high school students reported ever having had sexual intercourse and 30.1% were currently sexually active. Of that 30.1%, 56.9% reported that either they or their partner used a condom during last sexual intercourse, and 13.8% reported that neither they nor their partner used any method to prevent pregnancy at last sexual intercourse (Kann et al., 2016). In addition to highlighting adolescent pregnancy risk, the Centers for Disease Control and Prevention (CDC) report that while youth ages 15-24 make up just over one quarter of the sexually active population, they account for half of the 20 million new sexually transmitted infections (STI) that occur in the U.S. each year (CDC, 2015b).

One particular STI has garnered increased attention in recent years from researchers and health professionals – human papillomavirus (HPV). HPV is the most common sexually transmitted infection (STI) in the United States; according to the CDC, an estimated 79 million Americans are currently infected with HPV, and about 14 million people become newly infected each year. Almost 50% of new infections occur in women ages 15-24 (CDC, 2016c). HPV is so common that nearly all sexually active men and women will get at least one type of HPV at some point in their lives, and most will never know they were infected (CDC, 2016c; The Henry J. Kaiser Family Foundation, 2015).

There are more than 150 strains of HPV, more than 40 of which can cause cancer. HPV is related to almost 100% of cervical cancer cases, with two strains (16 and 18) related to approximately 70% of cervical cancer cases.  It is estimated that over 12,900 new cases and more than 4,100 deaths from cervical cancer will occur in the United States in 2015.  Cervical cancer is usually treatable, especially when detected early through routine screening with Pap tests; guidelines issued by the U.S. Preventive Services Task Force recommend that most women ages 21 to 65 receive a Pap test once

every three years. There is no cure for HPV; in addition, no screenings exist for men, even though men can spread HPV to sexual partners and experience HPV-related diseases, including genital warts and penile cancers (Snyder, 2010).

Risky sexual behavior is common among college students; campus "hook-up" culture promotes casual and unplanned sexual encounters (Burdette et al., 2009; Grello et al., 2006), and students often perceive potentially risky sexual behaviors (including unprotected oral sex and unprotected anal sex) to be less intimate (and therefore more allowable) than sexual intercourse (Chambers, 2007; Kelly & Kalichman, 2002; Lyons, Manning, Giordano, & Longmore, 2013). Many indicators of sexual risk have been used in previous research, but some are used in a majority of studies, including frequency and/or consistency of condom use (e.g. Baldwin & Baldwin, 1988; Chen, Thompson, & Morrison-Beedy, 2010; Graves & Leigh, 1995; Reinisch, Hill, Sanders, & Ziemba-Davis, 1995), number of sexual partners (e.g. Chen et al., 2010; Paterno & Jordan, 2012; Vesely et al., 2004), age of first intercourse (e.g. Alexander, Somerfield, Ensminger, Johnson, & Kim, 1993; Karofsky, Zeng, & Kosorok, 2001; McCree, Wingood, DiClemente, Davies, & Harrington, 2003), use of drugs or alcohol before sex (e.g. Graves & Leigh, 1995; Parsons, Halkitis, Bimbi, & Borkowski, 2000; Weinman, Small, Buzi, & Smith, 2008), and participation in oral and/or anal sex (e.g. Brewster & Tillman, 2008; Chambers, 2007; Grello et al., 2006; Owen et al., 2015). It is important to note that oral and/or anal sex are not inherently riskier than vaginal sex; they are classified in most studies as risk behaviors specifically because of the high likelihood that they will occur without protection against STIs (American College Health Association, 2015; Boekeloo & Howard, 2002; Brückner & Bearman, 2005; E. W. Moore & Smith, 2012). One major

limitation of the current literature on adolescent sexual risk behaviors is the overwhelming tendency for the studies to reference heterosexual (usually vaginal) sex, without considering homosexual or heterosexual-but-non-vaginal sexual encounters.

Many studies support the existence of a relationship between religion or religiosity and attitudes about sex and sexual behavior. Thornton and Camburn (1987) found church attendance to be a strong predictor of restrictive attitudes about sex among teens; a follow-up study (1989) confirmed that both religious denomination and church attendance affected attitudes about sex, but only church attendance affected whether or not a teen had had sex. Religiosity has been shown to influence sexual attitudes, which are related to sexual intercourse and number of sexual partners (Lefkowitz et al. 2004). In their review of empirical studies from 1980 to 2000, Rostosky et al. (2004) found frequent support for the hypothesis that religiosity influences the delay of sexual onset among female adolescents. However, they noted the lack of sufficient studies including non-White participants, as well as the tendency of researchers to use limited or one-dimensional measures of religiosity, sexual behavior, or both. Another limitation of the existing body of research related to religion and adolescent sexual outcomes is the age (and out-datedness) of the literature; given the dynamic, changing environment surrounding sexual knowledge, norms, and behaviors, newer research is needed that reflects the modern adolescent environment.

A majority of the research has focused on the relationships between an individual's own religiosity, and sexual attitudes and behaviors. In a study of college students, Luquis et al. (2012) identified differences in sexual attitudes and religiosity by gender, and found that both sexual attitudes and religiosity were associated with specific

sexual behaviors, including ever having had sex and number of sexual partners. Lefkowitz et al. (2004) found that religious behavior may be the strongest predictor of college students' sexual behavior, whereas attitudinal or ideological measures of religiosity may be better predictors of sexual attitudes. These results highlight the need for identifying specific religious and sexual constructs within a research design.

Parents have consistently been identified as the most important source of religious influence, both in childhood and adolescence, and into adulthood (Lambert & Dollahite, 2010; C. Smith, 2003; C. Smith & Denton, 2005; C. Smith, Faris, Denton, & Regnerus, 2003). Parental religiosity in particular is associated with adolescents being less involved in problematic behaviors such as alcohol and drug use (Foshee & Hollinger, 1996; Hayatbakhsh, Clavarino, Williams, & Najman, 2014; Pearce & Haynie, 2004). In a nationally representative sample of teens ages 11-18, perception of religious importance and involvement in religious activities were significantly associated with reduced probability of engaging in numerous risk behaviors (Sinha, Cnaan, & Gelles, 2007).

Overall family environment also plays a protective role in adolescent reproductive health decisions (Manlove, Logan, Moore, & Ikramullah, 2008). However, few studies have considered the impact of parental or family religiosity on adolescent sexual outcomes, either directly or through influence on adolescents' own religiosity; those that do exist have used single variables, such as parents' report of religious involvement or of specific beliefs, as a proxy for family religiosity (Manlove et al., 2008; Manlove, Terry-Humen, Ikramullah, & Moore, 2006). Further research is needed to inform a more complete understanding of the mechanisms by which multiple dimensions of family

religiosity may impact adolescents' own religiosity and their sexual health decision-making.

Communication about values is one of the primary means by which parents socialize their children (K. A. Moore, Peterson, & Furstenberg, 1986); parents choose what messages and values to communicate to their children, and how and when to deliver them. Research has shown that parents can play an important role in adolescents' sexual health decision-making through their parent-teen relationships, parenting practices, and communication about sex and sexual risk (Aspy et al., 2007; Dittus, Miller, Kotchick, & Forehand, 2004; Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003). Parent-child communication is unique because discussions can be continuous and ongoing, congruent with experiences, and immediate (these conversations can occur as a child has questions, or in anticipation of a child's needs, rather than in the formulaic program of school-based sex education) (P. Dittus et al., 2004). In particular, strong parent-child communication leads to better contraceptive use and lower incidence of sexual risk behaviors (DiIorio, Kelley, & Hockenberry-Eaton, 1999; Weinman et al., 2008). Previous studies have also shown that adolescents' perceptions of parental attitudes toward sex and condom use are associated with adolescents' own attitudes, beliefs, and behaviors (Hutchinson & Montgomery, 2007; Jaccard, Dittus, & Gordon, 1998). A study using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) found that although greater perceived maternal disapproval of sexual activity was associated with a reduced likelihood of initiating sex, adolescent-perceived disapproval was a stronger predictor than maternal-reported disapproval (Dittus & Jaccard, 2000).

We know that parents can exert great influence on their children's attitudes and behaviors; what is less well understood are the processes through which this influence occurs. While some parents may advocate for abstinence as the only viable option for their teens, others may allow teens more autonomy in their decision-making, and others may not broach the topic at all (Carlson & Tanner, 2006). Further research is needed in order to identify the processes through which family communication of attitudes about sex may influence adolescents' own attitudes as well as their sexual risk and protective behaviors.

Social learning theory is be used to guide the proposed study. This theory suggests that learning is a cognitive process that takes place in a social context; children learn first by observing, and later imitating, various role models (Bandura, 1977). Its concepts can be (and have been) applied to the processes of religious socialization (Petts, 2015), sexual socialization (Felson & Lane, 2009; Hogben & Byrne, 1998), and health decision-making (Balassone, 1991; DeMartino, Rice, & Saltz, 2015; Patock-Peckham, Cheong, Balhorn, & Nagoshi, 2001). Based on the theory's principles of observation, communication, and social interaction, this study's conceptual model predicts that college students' religiosity and attitudes about sex, and ultimately their sexual risk and protective behaviors, are influenced by family modeling of religiosity and family communication about sex.

The current study extends the literature in order to improve our understanding of the relationships between multi-dimensional aspects of family religiosity and family communication about sex and college students' religiosity, attitudes about sex, sexual involvement, and sexual risk and protective behaviors. This study contributes to existing

literature in a few unique ways. First, it identifies multiple dimensions of potential religious influence, rather than the typical one-dimensional measure of religious attendance. Second, it considers *sexual activity* and *sexual risk* as independent constructs within the broader context of sexual behavior, allowing for the possibility to observe different avenues of influence by specific sexual act or practice. And third, it considers both family-level and individual-level influences on college students' behavior, acknowledging that these different spheres may be congruent or may contradict one another.

Below are definitions of some key terms used throughout this study.

## Key Terms

**Sexual Activity –** For the purposes of this study, the term sexual *activity* refers to six specific behavioral outcome variables: (1) having had 4 or more lifetime sexual partners (for oral, vaginal, or anal sex); (2) age at first sex (oral, vaginal, or anal), (3) ever having had oral sex, (4) ever having had vaginal sex, (5) ever having had anal sex, and (6) only having had oral sex.

**Sexual Risk –** As defined by the Centers for Disease Control and Prevention (CDC, 2017a), *sexual risk behaviors* are any that place individuals at risk for HIV infection, other sexually transmitted infections, and/or unintended pregnancy. For this study, the seven sexual risk behavior outcomes are: (1) substance use (alcohol or drugs) before last vaginal sex, (2) lack of condom use during last vaginal sex, (3) lack of pregnancy prevention during last vaginal sex, (4) ever having had unprotected oral sex, (5) ever

having had unprotected vaginal sex, (6) ever having had unprotected anal sex, and (7) having received the HPV vaccine.

**Religiosity** – Most broadly, the term *religiosity* is defined as the quality of being religious; measures of religiosity are designed to measure an individual's response to a question like "How religious are you?" For this study, religiosity is considered at both the family level and the individual (student) level, with a focus on the multiple dimensions of religiosity, including attendance at religious services, private faith activities (e.g. prayer or meditation), and the self-reported importance of religion to the individual or family.

**Sex Attitudes** – The term *sex attitudes* refers to an individual's beliefs about sexuality and sexual behavior. For the purposes of this study, *positive* or *more open* sex attitudes refer to a less traditional view of sex (e.g. the acceptability of casual sex, or the need for both partners to be active in contraception decisions) and *negative* or *less open* sex attitudes refer to a more traditional view of sex (e.g. that sex should be reserved for marriage or at least a serious, committed relationship, or that sex is primarily about procreation, rather than pleasure).

**Sex Communication** – The term *sex communication* refers to any sharing of information about sexual topics and includes both formal sex education and informal conversations about sex. For this study, *sex communication* is measured in the family context and addresses whether or not parents and adolescents communicated about specific sexual topics such as contraception or disease prevention; a higher score on the family sex

communication measure implies more comprehensive (e.g. covering more sexual topics)

communication.

## Chapter 2: Literature Review & Theoretical Framework

This chapter describes the current literature relevant to the study's research questions, as well as the theoretical framework guiding the current study. First, it describes existing research on religion, its role in family life, and its relation to individual and family attitudes about sex and sexual risk and protective behaviors. Next, a review of the literature on family communication about sex and parents' roles in transmitting attitudes and values about sex is presented, as well as current knowledge on college students' sexual attitudes and behaviors. Finally, the study's guiding theoretical framework is presented and applied to the understanding of pathways from family religion and sex communication to college students' sexual attitudes and behaviors.

**Religiosity**

The study of religiosity has been, to date, both inter-disciplinary and imprecise (Holdcroft, 2006). It can be assessed from the viewpoint of faith, orthodoxy and belief, or from the concrete practice of church membership and attendance at religious services. The term might also be used to imply a level of devotion or piety. Some studies use the terms 'religion' and 'religiosity' interchangeably (eg. Hardy & Raffaelli, 2003); others refer to the parameters defined by Allport & Ross (1967), that religiosity be defined in terms of an individual's religious orientation, both intrinsic (turning to religion to find spiritual guidance, development, and meaning), and extrinsic (using religion primarily for personal or social gain) (eg. Lyons & Smith, 2014).

Measures of religiosity are varied, but most research on religion and adolescents uses some combination of behavioral items as measured by the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative study of

American adolescents in grades 7-12. These items include perceived importance of religion and attendance at worship services (eg. Bearman & Bruckner, 2001; Hardy & Raffaelli, 2003; Sinha et al., 2007), frequency of prayer (eg. Bearman & Bruckner, 2001; Smith et al., 2003), and participation in religious youth groups (Sinha et al., 2007). In a comprehensive review of research on associations among religiosity and adolescent health, Rew & Wong (2006) found that 53% of studies used church attendance to indicate religiosity, and 23% used religious importance, while only 2.3% considered family religious socialization as an indicator of religiosity.

Research on religiosity has been further limited by the predominance of scales designed with an American Protestant orientation (P. C. Hill & Hood, 1999; Lambert & Dollahite, 2010). Scales to measure non-Protestant religion are less common, with few measures specific to non-Western faiths. Measures of religiosity also tend to reflect Christian biases, even when they are not specifically designed for Christian audiences (Heelas, 1985). Another facet of religiosity that has been largely ignored by previous measures is the importance of being culturally embedded within a religious group, and the wide variation in that involvement by religious tradition (Pena & Frehill, 1998). Certain collectivist religious cultures, such as Judaism, Catholicism, and Hinduism, value social connections and community affiliation as integral to religious life; these traditions tend to use ritual and tradition to regulate individual religious behavior (Cohen & Hill, 2007). Some American Protestant groups, in contrast, identify religious experience through an individual's personal relationship with God and focus on individual faith (Cohen & Hill, 2007). Within the family context, wide variations in religious tradition and expectations for religious involvement will manifest as different types of religious

socialization (Bulanda, 2011); a comprehensive measure of individual and family religiosity must reference elements of both individualistic and collectivist religious cultures in order to more fully capture the meaning of religion to a particular individual. The current study incorporates multiple dimensions of religiosity at both the individual- and family-level, capturing elements of personal belief, public and private practice, and community participation.

**Religion and the Family**

Many links between religion and various aspects of family life have been well-established. For married couples, religious involvement, practices, and beliefs promote marital fidelity, both directly and indirectly, by sanctifying the idea of marriage, improving marital quality, and strengthening couples' moral values (Dollahite & Lambert, 2007). Women who describe religion as 'very important' have higher fertility than women for whom religion is 'somewhat important' or 'not important'; these fertility differentials are explained by differences in fertility intentions (Hayford & Morgan, 2008). Meanwhile, among parents, weekly attendance at religious services is associated with a higher likelihood of monitoring their children's friendships and imposing higher expectations about sexual morality; both generic religiosity and religious culture are significantly associated with monitoring of adolescents' media access and normative regulations on having sex (Kim & Wilcox, 2014). Research has also suggested that family serves as a commitment mechanism for organized religion – young adults with strong ties to their families of origin are less likely to drop out of the church (J. Wilson & Sherkat, 1994).

A growing body of literature explores potential relationships between religion involvement and specific aspects of family structure, with mixed results. Some suggest that the more conventional, or 'traditional', family structures have the highest participation rates, because organized religion tends to best serve conventional families (Stolzenberg et al., 1995). Myers (1996) found that a 'traditional' family structure (one in which the father works more hours per week, while the mother is less involved in the labor force, and in which the father is the primary decision-maker) enhances the ability of parents to transmit their religiosity; however, more recently, Petts (2015) found that family structure generally did not have a direct influence on youth religiosity.

Focusing on household composition, family structure in general did not appear to have a consistent direct influence on adolescent religiosity, nor was it significantly related to changes in adolescent religiosity over time (Denton, 2012). However, when looking at a specific disruption in family structure (a parental divorce or remarriage), the religious consequences for adolescents are highly contingent on the religious profiles of the adolescents themselves at the time of the event (Denton, 2012). Further studies suggest that parental divorce may affect only institutional but not private aspects of a child's religious life (Uecker & Ellison, 2012; Zhai, Ellison, Stokes, & Glenn, 2008); these effects are due to a loss of religious socialization from the second parent. Adults from single-parent families are more likely to completely disaffiliate from religion and to make a major switch in religious affiliation, and are less likely to attend religious services regularly (Uecker & Ellison, 2012).

**Transmission of Religion**

Existing literature suggests that the most important determinant of adult religiosity is religious beliefs and participation between the ages of 18 and 20 (Stolzenberg et al., 1995; J. Wilson & Sherkat, 1994), and that parents are one of the strongest socialization influences on adolescent religiosity (C. Smith & Denton, 2005); youth are less likely to be religious when raised by parents with low levels of religiosity (Petts, 2015). In a qualitative study of highly religious families, families related religious conversations as the most meaningful religious activity, even when compared with church attendance or family prayer. Parents and adolescents both named religious conversation as the primary method of sharing their faith (Dollahite & Thatcher, 2008).

Religious upbringing, probably the most important source of religious human capital, is a major determinant of religious belief and behavior (Iannaccone, 1990). Most of children's 'religious capital' (familiarity with a religion's doctrine, rituals, traditions, and members) is built up in a context regulated and favored by their parents; this capital enhances an individual's satisfaction with religious participation, and so increases the likelihood of later participation (Iannaccone, 1990; Stolzenberg et al., 1995). The importance that parents attach to religion is a significant predictor of adolescent church attendance, the importance of religion, the frequency of prayer, and the sense of their religion's doctrine as sacred (Bader & Desmond, 2006). Negative parental relationships can and do interfere with religious socialization, as do differing religious beliefs among parents (Myers, 1996). Meanwhile, college students' retrospective views of their childhood faith activities were related to their current religious orientations, prayer frequency, and prayer meaning; family faith practices in the home during a child's

upbringing are ingrained in each family member, even after they leave the home (Lambert & Dollahite, 2010).

Both male and female adolescents acquire religious beliefs and practices from their parents through imitation and modeling; mothers appear to be more influential than fathers on both males' and females' religious beliefs. In particular, mothers' influence is stronger than fathers' when adolescents perceive their mothers as accepting (Bao, Whitbeck, Hoyt, & Conger, 1999). The transmission of beliefs and practices from mothers to children requires not only religious commitment on the part of the mother, but also supportive parent-child relationships (Bao et al., 1999). Analysis of Add Health data suggested that the greater the adolescent's sense of attachment to parents, the greater the frequency of church attendance and the greater the importance attached to religion (Bader & Desmond, 2006).

Most American youth experience a decline in religious involvement during adolescence and attend religious services relatively infrequently by early adulthood; however, family and religious characteristics can influence when and how quickly this decline occurs. Overall, young adults are vastly more likely to curb their attendance at religious services than to change their view of the importance of religion or to drop religious affiliation completely (Uecker et al., 2007). Some research suggests that the greatest intergenerational decline in religiosity occurs for individuals from the most religious backgrounds (Myers, 1996; Sharot, Ayalon, & Ben-Rafael, 1986); at the same time, rates of intergenerational religious change tend to be particularly low for individuals reared in these distinctive religious traditions (Iannaccone, 1990).

One study found that religious decline in young adulthood varies by education level – those with the highest level of education (at least a bachelor's degree) are the least likely to exhibit a decline in religious attendance, the least likely to report a decrease in the importance of religion in their lives, and the least likely to completely drop their religious affiliation (Uecker et al., 2007). Religious transmission benefits from consistence between parental religious behaviors and attitudes (Bader & Desmond, 2006); youth who are raised in a family that conveys consistent religious messages, and whose family structures reflect the same religious teachings, may be more likely to delay any decline in religious involvement and continue to attend services throughout adolescence (Petts, 2009).  The current study further illuminates pathways between family religiosity and family structure during childhood and early adolescence and college students' reports of their current religiosity.

**Religion and Attitudes about Sex**

Religious affiliation has also been associated with particular moral and behavioral attitudes.  Among college students at a large public university in the Eastern US, individuals for whom religion was more a part of their daily lives and those who adhered to their religion's teachings on sexual behaviors tended to have more conservative sexual attitudes (Lefkowitz, Gillen, Shearer, & Boone, 2004).  In their analysis of data from the Intergenerational Study of Parents and Children, Pearce & Thornton (2007) found that, beyond variations in ideologies of different religious denominations, greater participation in most religious congregations resulted in adults being more anti-premarital sex, anti-cohabitation, anti-abortion, pro-marriage, anti-divorce, and pro-breadwinner-housewife family organization. They also found an intergenerational connection – a mother's more

frequent attendance at religious services prior to her child's birth is related to her child (at age 18) being more anti-premarital sex, anti-cohabitation, anti-abortion, and anti-divorce (Pearce & Thornton, 2007). Data from the 2002 National Survey on Family Growth demonstrate a strong association between traditional family attitudes, the importance of religion, and higher intended family size, but the authors note that it remains unclear whether women for whom religion is more important develop more conservative attitudes, or whether women with more traditional family values are drawn to religion (Hayford & Morgan, 2008).

An assessment of sexual knowledge and attitudes among medical and nursing students found that the most influential 'background' variable on both outcomes was attendance at religious services (of any religious denomination). Students who had attended any religious service in the past month were three or more times more likely to express negative attitudes about sex, and to have lower sex knowledge (McKelvey, Webb, Baldassar, Robinson, & Riley, 1999).  Similarly, a study of undergraduate students at a large public university found that students who adhered more closely to their religions were less likely to believe that condoms could prevent negative outcomes, such as pregnancy or STIs, and tended to perceive more barriers to condom use (Lefkowitz et al., 2004). Interestingly, the same study found that students who attended services more frequently had less fear about HIV, but students who reported religion playing a more important role in their daily lives tended to have more fear about HIV, implying that attendance at religious services and the 'importance of religion' may be completely separate phenomena, at least in relation to sexual knowledge and attitudes (Lefkowitz et al., 2004).

**Religion and Adolescent Sexual Behavior**

A large body of research offers evidence that religion is related to adolescent sexual behavior; higher levels of family religiosity and parental religious attendance are associated with delayed sexual onset (Manlove et al., 2006), and having fewer sexual partners (Manlove et al., 2008). Parents of teenagers who were sexually active at age 17 had lower levels of religious attendance, prayer and beliefs than parents of teenagers who were not sexually active (Manlove et al., 2008).

Various aspects of adolescent religiosity are associated with sexual activity, both directly and indirectly. Frequent attendance at religious services has a strong effect on delaying first intercourse (Jones, Darroch, & Singh, 2005). Emerging adults with high levels of personal religiosity were the least likely to engage in sexual intercourse, even within a committed (non-marital) relationship (Barry, Willoughby, & Clayton, 2015). Religious adolescents are less likely to have had sex than less religious adolescents; friends' religiosity further reduces the odds of religious adolescents having had sex. The influence of friends' religiosity is particularly salient in denser networks of religious friends, probably via reduced opportunity, reputational costs, and pro-virginity norms (Adamczyk & Felson, 2006). Using data from the National Longitudinal Survey of Youth, Manlove et al. (2006) suggest that specific denominational affiliation is not as important a predictor of adolescent sexual behavior as religious attendance, supporting the idea that religious networks reinforce moral directives and discourage risky behaviors. Regnerus (2010) agrees, suggesting that the influence of adolescent religiosity on sexual behaviors tends to occur through exposure to supportive friends and family, and religious teachings that support an existing religious commitment to influence behavior.

Some studies have identified differences in the relationship between religion and sexual outcomes based on adolescents' gender and race/ethnicity. Luquis, Brelsford, & Rojas-Guyler (2012) found that private religious practices influenced sexual behavior among male students, while more public attendance at religious services was related to sexual behavior among female students. The different roles that private/personal and public/behavioral aspects of religiosity in adolescent sexual behavior also emerged in a nationally representative sample of adolescents aged 11-18; perceived importance of religion was positively correlated with sexual activity, but attendance at worship services and involvement in a religious youth group were negatively correlated with sexual activity (Sinha et al., 2007). In the same study, Black teens reported being both more religiously active and most sexually active, as compared to White and Latino teens (Sinha et al., 2007). African American youth are among the earliest to experience sexual intercourse, a phenomenon that does not appear to be delayed by religious involvement. African American youth, religious or not, display less restrictive sexual attitudes and practices than do religious White youth (Regnerus, 2010).

The above research supports the conclusion that religious involvement is associated with less adolescent sexual activity; however, these studies implicitly equate *sexual involvement* (ever having had sex, age at sexual debut, and number of sexual partners) with *sexual risk behavior*, often while ignoring other avenues of sexual risk (inconsistent contraceptive use, ever having had oral and/or anal sex, ever having had sex with a non-romantic partner, and frequency of condom use for each of these behaviors). In addition, research suggests that adolescents and college students today are less well-informed about the specific sexual values of their individual religions, and that younger

people, even those who identify as religious, do not adhere to their faiths' doctrines on human sexuality as strictly as older generations (Prothero, 2007; Regnerus, 2007). Therefore, further research is needed to explore the relationship between both public and private religiosity and adolescent sexual behavior, and to distinguish between sexual activity and specific sexual risk behaviors.

**Parent-Child Communication and Adolescent Sexual Behavior**

Research suggests that teens would prefer to receive information about sexual topics, including contraception, from their parents rather than from a health center, educational class, friends, or the media (Hacker, Amare, Strunk, & Horst, 2000). However, many parents are not comfortable talking to their adolescent children about sex or sexual topics (Lefkowitz, Sigman, & Au, 2000; Wilson, Dalberth, Koo, & Gard, 2010); parents also tend to underestimate the sexual behavior of their adolescents (Jaccard et al., 1998).

The family context provides children with a framework for acceptable behavior; a variety of specific parenting behaviors have been identified as protective against adolescent risk behaviors, in particular parental monitoring, which is usually defined through rule-setting and vigilant oversight of a child's friend group and activities (Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2006; Chilcoat & Anthony, 1996; Li, Stanton, & Feigelman, 2000). A substantial body of research has shown that parents can play an important role in adolescents' sexual health decision-making through their parent-teen relationships, parenting practices, and communication about sex and sexual risk (Aspy et al., 2007; Dittus et al., 2004; Hutchinson et al., 2003; Wight, Williamson, & Henderson, 2006). Adolescents who report higher levels of parental monitoring are more likely than

others to delay sexual onset (DiIorio, Dudley, Soet, & Mccarty, 2004; Karofsky et al., 2001), and to have fewer partners if they are sexually active (DiClemente et al., 2001; Huebner & Howell, 2003). Higher levels of parental monitoring are also associated with less favorable adolescent attitudes about initiating sexual intercourse, and lower intentions to engage in intercourse (Sieverding, Adler, Witt, & Ellen, 2005).

Strong parent-child communication leads to more consistent contraceptive use and lower incidence of sexual risk behaviors (DiIorio et al., 1999; Harris, Sutherland, & Hutchinson, 2013; Weinman et al., 2008). Adolescents who reported a greater number of sexual topics discussed with their mothers were less likely to have initiated sexual intercourse, and more likely to express 'conservative' values about teen sexual activity (DiIorio et al., 1999; Hutchinson & Montgomery, 2007). Among sexually experienced females ages 12-19, higher levels of mother-daughter sexual risk communication was linked to significant reductions in the number of occurrences of intercourse, as well as the number of days of unprotected intercourse (Hutchinson et al., 2003). Adolescent girls who reported less communication with their parents about sex-related issues were more likely never to use condoms or other types of contraception; less communication was also associated with decreased frequency of communication between adolescent girls and their sex partners, and lower perceived self-efficacy to negotiate in sexual situations (DiClemente et al., 2001). Similarly, Whitaker, Miller, May, & Levin (1999) found that parent-adolescent communication about sexual issues is associated with an increased likelihood of adolescents discussing sexual risk with their partners, but only if that parental communication is open and comfortable.

A new sphere of parental influence on adolescent sexual health has emerged in recent years, with the advent of the HPV vaccine. Three vaccines against HPV are currently approved by the U.S. Food and Drug Administration (FDA) – *Gardasil*, *Cervarix*, and the new *Gardasil-9.* All are noninfectious, recombinant vaccines, meaning that they stimulate an immune response but cannot cause HPV because they are made with proteins that contain only part of the virus (Casper & Carpenter, 2008). All three vaccines target HPV-16 and HPV-18, which together account for nearly 70% of cervical cancers; *Gardasil* and *Gardasil-9* additionally target HPV-6 and HPV-11, which produce 90% of genital warts, and *Gardasil-9* additionally protects against infection with HPV types 31, 33, 45, 52, and 58, which are responsible for another 20% of cervical cancers. All three vaccines are administered by injection in three doses over a period of six months, with minor potential side effects. *Gardasil* and *Gardasil-9* have been approved for use in males and females ages 9-26; *Cervarix* can only be administered to females ages 10-25. The federal Advisory Committee on Immunization Practices (ACIP) recommends that all girls and boys get vaccinated at age 11 or 12, and that girls and women ages 13-26 and boys and men ages 13-21 be given a 'catch-up' vaccination. The vaccine is recommended for use in men ages 22-26 if they are immune-compromised and have not been previously vaccinated against HPV, or if they engage in sexual activity with other men. ACIP recommended the vaccine for females in 2006, and added the recommendation for males in 2011 (CDC, 2016; Kaiser, 2015).

A 2013 CDC study in *The Journal of Infectious Diseases* examined the prevalence of HPV infections in girls and women before and after the introduction of the HPV vaccine, and demonstrated a significant reduction in vaccine-type HPV in U.S.

teens: since the vaccine was introduced in 2006, vaccine-type HPV prevalence decreased 56 percent among female teenagers 14-19 years of age (Markowitz et al., 2013). Federal recommendations and documented evidence notwithstanding, only one-third of girls ages 13-17 have been fully vaccinated with HPV vaccine (in sharp contrast to other countries – for example, the U.K., Australia and Rwanda alike have vaccinated more than 80 percent of their teen girls).

A variety of factors may influence a parent's decision-making when it comes to vaccinating their child; for the HPV vaccine in particular, the sexual nature of the disease comes into play for parents considering whether or not to vaccinate their child. Opponents of the HPV vaccine claim that vaccinating young women may contribute to earlier sexual initiation as well as promiscuity (Reynolds & O'Connell, 2012; Thomas, Strickland, DiClemente, Higgins, & Haber, 2012); campaigns promoting the HPV vaccine have attempted to counter the sexualization of the issue by focusing on the cancer-prevention benefits of the vaccine.

Despite the high prevalence of HPV, numerous studies have shown that awareness of the disease is limited, and even among those who are aware of the virus, misconceptions abound (Gerend & Magloire, 2008; Marek et al., 2011; Thomas et al., 2012). Given that parents play a large role in the vaccination behaviors of their adolescent daughters, their beliefs about vaccination are important for vaccine initiation; a significant body of research has examined these beliefs and their relationship to a parent's intent to vaccinate. Little previous research exists, however, that examines the relationship between these beliefs and actual vaccine uptake and compliance.

In addition to beliefs about the vaccine, parents' religiosity may play a role in the decision to vaccinate against HPV. One study found that religious affiliation among rural, African American parents was positively correlated with vaccinating or planning to vaccinate a child (Thomas et al., 2012), but another found that parents with frequent attendance at religious services were more likely than parents who did not attend services to have decided against vaccination (Shelton, Snavely, de Jesus, Othus, & Allen, 2013). Clearly, further, targeted research is needed to fully understand the relationship between parents' and adolescents' religiosity and adolescents' sexual health needs and decision-making.

**Parent Attitudes**

The above-mentioned studies highlight the range of existing research on parent-child communication and adolescent sexual behaviors. However, few studies provide insights into the specific details of such communication – the topics covered, or the messages conveyed. One study using a subset of 14- and 15-year olds in the Add Health data demonstrated a double standard in the content of sexual conversations between mothers and sons vs. mothers and daughters.  Mothers were more likely to recommend birth control to their sons, even though they opposed both their sons and daughters initiating sexual activity (McNeely et al., 2002). But the content of the conversations do matter. In one CDC-funded community initiative, youth (ages 13-17) were much less likely to have initiated sexual intercourse if their parents taught them to say no, set clear rules at home, talked about 'right' and 'wrong' in sexual encounters, and discussed delaying sexual activity. Sexually active youth were more likely to use birth control if

they had been taught at home about delaying sexual activity and about birth control (Aspy et al., 2007).

One qualitative study using parent focus groups demonstrated that, although a majority of the parents described themselves as being open about sexuality with their children (ages 10-19), only a minority reported having conveyed direct messages to their children about contraceptives or condom use (Hyde et al., 2013). A previous study, also qualitative, found that parents of children ages 10-12 believed it was important to talk to their children about sex, but many had not done so (Wilson et al., 2010).  Using Add Health data, Meneses, Orrell-Valente, Guendelman, Oman, & Irwin (2006) found that ethnicity predicted various aspects of mother-daughter communication, including maternal discomfort in discussing sexual topics. Non-White mothers reported higher discomfort compared with Whites; Latina and Asian mothers were more likely to avoid sexual discussions with their daughters, and yet most likely to have accurate knowledge of their daughters' sexual experiences. Another study of Add Health data found that mothers' reported values about sex and relationships influenced the sexual behavior of female adolescents but not male adolescents (McNeely et al., 2002), perhaps because discussions with daughters tend to highlight the negative consequences of sex, including pregnancy, risk of sexually transmitted diseases, and negative social stigma (Miller, Benson, & Galbraith, 2001).

**Adolescents' Perceptions of Parent Attitudes**

Research has shown that adolescents' perceptions of parental attitudes toward sex and condom use are associated with adolescents' own attitudes, beliefs, and behaviors (Hutchinson & Montgomery, 2007; Jaccard et al., 1998). Without open and direct

communication between parents and adolescents around sexual topics, the possibility of conveying mixed messages is high. A series of studies using Add Health data examined adolescent perceptions of maternal attitudes about sexual topics. The first found that an adolescent who perceives maternal approval of birth control use may be more likely to initiate sex if he or she is a virgin; however, perceptions of approval were also associated with an increased tendency to have used birth control at last sex (Jaccard & Dittus, 2000). The second study found that the more an adolescent perceived maternal approval of birth control use, the higher the likelihood of the adolescent to underestimate maternal opposition to the adolescent's engaging in sex (Dittus & Jaccard, 2000). This research suggests that a lack of clear, effective communication may lead adolescents to misinterpret messages about the importance of using birth control as greater approval of their engaging in sexual intercourse.

However, the same study found that an adolescent's perception of greater maternal disapproval of sexual activity was associated with a reduced likelihood of initiating sex or becoming pregnant; in fact, adolescent perception of maternal disapproval was a more consistent predictor of outcomes than actual maternal-reported attitudes (Dittus & Jaccard, 2000; Jaccard et al., 1998). Further analysis of the Add Health data suggests that even among sexually active adolescents, perceived parental disapproval of premarital sex is associated with a lower likelihood of engaging in risky sexual behaviors, including having nonromantic sex, having anal sex, and not using a condom (C. W. Chen et al., 2010).

**Students' Knowledge of Sexual Risk**

Family communication about sex and sexual risk is also related to accurate sex knowledge among adolescents (Pick & Palos, 1995). Researchers have measured college students' sexual 'knowledge' objectively, through fact-based surveys, and subjectively, based on students' self-report of their own knowledge, with mixed results.  One study of college students in the midwestern United States found that though students were generally factually knowledgeable about the HIV/AIDS epidemic, many misconceptions regarding disease transmission and treatment options still existed. The majority of students perceived themselves to be at low risk for contracting HIV infection, even though they were involved in high risk sexual activity (sex with multiple partners within the past 12 months without consistent condom use) (Inungu, Mumford, Younis, & Langford, 2009).

Specifically in terms of HPV knowledge, a study of college students in the northeastern United States found that fewer than half of the college students surveyed answered the HPV knowledge questions correctly; participants lacked vital knowledge surrounding transmission of the disease, and greatly misunderstood/underestimated the actual prevalence of HPV infection in the US population (Sandfort & Pleasant, 2010). Multiple studies demonstrate that overall, for males and females, both objective and subjective knowledge of major contraceptive methods is low (Frost, Lindberg, & Finer, 2012; Greaves et al., 2009; Toews & Yazedijan, 2012), though females tend to have higher sexual knowledge scores than males (Greaves et al., 2009; Toews & Yazedijan, 2012).

**Students' Attitudes**

Despite the high rates of teen pregnancies and births in the United States, more than 80% of adolescent pregnancies are reported as unintended (Kirby, 2007). Previous research has examined associations between adolescents' sexual knowledge, their attitudes about pregnancy, contraception, and sexual risk, and their actual sexual behaviors. This research indicates that for some adolescents, a sizeable disconnect exists between knowledge, beliefs, and behavior.

Among Australian medical and nursing students, students with negative attitudes towards sex were more likely to have lower sex knowledge scores. These lower sex knowledge scores, and lack of personal sexual experience, were independently related to negative attitudes towards premarital sex, contraception, homosexuality, and masturbation (McKelvey et al., 1999). Lou & Chen (2009) found similar results among adolescents in Taiwan; higher sexual knowledge had a significant direct negative effect on sexual attitudes. Among U.S. high school students, Mizuno, Seals, Kennedy, & Myllyluoma (2000) found that perceived knowledge and perceived attitudes also play a role in adolescent attitudes toward contraception; the number of friends perceived to have been using condoms influenced female attitudes toward condom use, while males were more likely to use a condom if they perceived that their sexual partners would appreciate it.

Data from the Add Health survey suggest that holding negative views of pregnancy is associated with increased odds of consistent contraceptive use (Ryan, Franzetta, & Manlove, 2007), while ambivalence toward pregnancy is associated with reduced odds of consistent contraceptive use  (Brückner, Martin, & Bearman, 2004;

Crosby, DiClemente, Wingood, Davies, & Harrington, 2002; Frost, Singh, & Finer, 2007). A subsequent study of data from the National Survey of Reproductive and Contraceptive Knowledge found that respondents who reported low commitment to avoiding pregnancy were more likely than those who were highly committed to pregnancy avoidance to engage in risky behavior (Frost et al., 2012).

A body of research has focused specifically on gender differences in attitudes towards sex, with varied results.  Some suggest that sexual attitudes (permissive or otherwise) are associated with sexual behavior, including number of sexual partners and frequency of sex, regardless of gender (Lefkowitz et al., 2004; Luquis et al., 2012), though attitudes do not completely determine behavior. In a comprehensive review of research on gender differences in sexuality, Petersen & Hyde (2010) report that overall, men report slightly more sexual experience and more permissive attitudes than women, though those differences are slight for most variables, with the exception of masturbation, casual sex, and attitudes toward casual sex.  A later study of U.S. college students confirmed that the majority of females reported more conservative attitudes related to casual sex, saying that they would only have sex if they were in a committed relationship, whereas the majority of males reported a greater willingness for casual sex (Toews & Yazedijan, 2012); however, females reported more positive attitudes towards contraception than males (Mizuno et al., 2000; Toews & Yazedijan, 2012). Some research suggests that the pattern of responses indicating gender-related differences in self-reported sexual attitudes and behavior may be influenced by normative social expectations for men and women, rather than by actual significant difference (M. G. Alexander & Fisher, 2003; Mizuno et al., 2000).

**College Students' Sexual Behavior**

The above-mentioned literature references a variety of sexual behavior outcomes among college students and suggests numerous potential predictors of those behaviors. Each of these studies, however, provides only a snapshot into small samples of college students' sexual lives. In 2015, the American College Health Association (ACHA) conducted a National College Health Assessment, surveying 93,034 students at 108 postsecondary institutions in the United States and reporting detailed information about specific sexual activities and sexual risk behaviors (American College Health Association, 2015). The mean age of the sample was 22; sixty-seven percent of respondents were female, thirty-two percent male. Seventy percent of students reported ever having had oral sex; among the forty-four percent who reported having had oral sex within the last 30 days, ninety-six percent reported having had it unprotected (meaning without any protective barrier) at least once. Sixty-seven percent of students reported ever having had vaginal sex; among the forty-eight percent who reported having had vaginal sex within the last 30 days, sixty-seven percent reported having had it unprotected at least once. Twenty-four percent of students reported ever having had anal sex; of the five and a half percent who reported having had anal sex within the last 30 days, seventy-eight percent reported having had it unprotected at least once (American College Health Association, 2015).

National data is also available on the prevalence of certain sexually transmitted infections among adolescents and emerging adults. Compared with older adults, sexually active adolescents aged 15-19 and emerging adults aged 20-24 are at a higher risk of acquiring STIs (CDC, 2017b). In 2016, persons aged 15-24 represented sixty-three

percent of all reported chlamydia cases; from 2015 to 2016, the rate increased four percent among those aged 15-19 and almost two percent among those aged 20-24. During 2015-2016, the rate of reported gonorrhea cases and primary and secondary syphilis cases also increased for both sexes in both the 15-19 and 20-24 age groups (CDC, 2017b).

The ACHA study also collected a large amount of data on substance use among college students, with specific questions for each of many drug and alcohol types; these data are difficult to compare with other studies, however, because of the highly specific nature of the ACHA questions which are not comparable to those asked in most other college student surveys. Sixteen percent of students did report having had unprotected sex when drinking alcohol at least once in the last 12 months (American College Health Association, 2015). In response to a survey item on HPV vaccine compliance, thirty-six percent of males and sixty percent of females reported having received the vaccine, and twenty-four percent of males and twelve percent of females were unsure of whether or not they had received it.

The 2011-2013 National Survey on Family Growth also provides nationally representative data on adults ages 18-24, though these participants are not necessarily college students. Among respondents, seventy-seven percent of females and seventy-eight percent of males have had oral sex; eighty-two percent of females and eighty percent of males have had vaginal sex; and twenty-eight percent of females and twenty-nine percent of males have had anal sex (all behaviors specifically with an opposite-sex partner) (Copen, Chandra, & Febo-Vazquez, 2016).

**Emerging Adulthood**

Much of the existing literature on college students' behavior is embedded in the study of adolescent health, most of which focuses on pre-teen and teenage children. Healthy People 2020 defines adolescents as individuals between the ages of 10 and 19 and young adults as individuals between the ages of 20 and 24 (Office of Disease Prevention and Health Promotion, 2017); the 'adolescent health' objectives of Healthy People 2020 seek to improve health outcomes for both of these age groups. It is important to acknowledge, however, that individual needs and experiences during these two developmental periods are likely to be significantly different, making untargeted research findings less generalizable to the entire group.

Traditional development theories have used the concept of life stages to explain a person's progress from one degree of life to the next, and have placed 18- to 29-year-olds somewhere on the spectrum between adolescence and young adulthood.  Jeffrey Arnett has proposed that to this age group belongs a new stage, that of emerging adulthood, which identifies a new and distinct period of the life course in industrialized societies (Arnett, 2000; Arnett, Kloep, Hendry, & Tanner, 2011). Arnett cites a range of evidence, from neuroscience and cognitive science to developmental psychology, to demonstrate the distinctive features of emerging adulthood in the contexts of social, educational and professional life.  His case is compelling, so much so that the theory has been used in hundreds of studies across fields (Arnett et al., 2011, p. 7).  He demonstrates the significant changes (economic, social, educational and familial) that have impacted this target age group of 18- to 29-year olds in recent decades, and suggests that these varied influences have created an entirely new beast in the emerging adult.  In the 1950s, this age cohort followed a fairly predictable life course: finish school, leave home, get

married and start a family, all by age 25. The new cohort, however, experiences significantly delayed adoption of these adult roles. Their new stage is characterized by exploration of the self, higher education, purposefully-delayed entry into the career workforce, sexual exploration, and a quest for self-sufficiency and freedom (Arnett, 2000, 2007).

Since the emergence (and wide acceptance) of Arnett's theory, researchers across disciplines have explored sexual behaviors specific to this developmental stage. Casual 'hook-ups', or sexual encounters outside of romantic relationships, are common during this time of exploration, and may provide an environment through which students can explore and develop individual sexual preferences and sexual persona (Allison & Risman, 2014; Grello et al., 2006; Stinson, Levy, & Alt, 2014). Data from the Online College Social Life Survey suggest that for college students, the later the student feels it is ideal to get married, the more the student will 'hook up', or have a sexual encounter outside of a romantic relationship, while in college (Allison & Risman, 2017). By snapshotting college students' specific sexual behaviors during their current developmental stage, this study contributes to the literature on emerging adults and provides insight into the ways in which early life family-level influences may continue to play a role in emerging adults' sexual behaviors and their exposure to sexual risk.

**The Present Study**

A few noticeable gaps exist in the literature described above: family religion has rarely been measured multidimensionally, and never in conjunction with family sex communication as an independent, co-occurring variable. In addition, studies of religion and attitudes about sex have focused on the college students' own reported religion and

attitudes, but not considered the potential family influences on either variable. And finally, previous research has largely failed to distinguish between sexual activity and sexual risk behaviors, instead often conflating the two. The current study seeks fills these gaps in the literature by considering the differential effects of both family-level and individual-level predictors on students' specific sexual activity and risk behaviors.

**Theoretical Framework**

Albert Bandura's social learning theory suggests that learning, rather than being purely behavioral, is a cognitive process that takes place in a social context.  Individuals are constantly learning by means of observation, communication, and interaction with others through social mechanisms.  The theory has three key constructs – *observational/vicarious learning* (individuals learn by observing a behavior and its consequences, positive or negative); *differential reinforcement* (a behavior may be viewed differently and result in different consequences in different settings); and *reciprocal determinism* (the mutual and independent causation between cognition, social context, and individual behavior) (Bandura, 1977; Grusec, 1992; Ward & Gryczynski, 2009).

The first construct of social learning theory, *observational* or *vicarious learning*, suggests that behavior modeling involves an active exchange between the role model and the observer; as the model performs a behavior, the observer must actively pay attention, retain the information, and practice the behavior, all within a system of adequate motivation (Grusec, 1992).  The family context provides a child with that system of modeling, reinforcement, and motivation; from a child's birth, parental modeling plays a major role in the child's physical, cognitive, and social development. One of the key

responsibilities of a family unit is the socialization of children to their unique environment. Not only do families offer children life sustaining physical support, including nutrition and safety, but also they create a learning environment through which children become consumers of the norms, values, and expectations of their particular world.

Family religion can play multiple roles in a child's socialization into a family. By observing parental religious practices, a child begins not only to recognize rituals and traditions that are unique to his/her own family context, but also to discern his/her role within the family dynamic. In addition, religious socialization, or the process by which an individual is socialized into a particular religious tradition, usually begins in the family context. Parents and other family members exchange their religious knowledge, values, customs, beliefs, and traditions with children, and model specific behaviors, from service attendance to individual prayer to standards of dress and behavior (Bebiroglu, Roskam, & van der Straten Waillet, 2015). Parent religiosity and religious identity provide early resources for children in shaping their own religious identities, beliefs, and behaviors (Regnerus, 2003); parents may also immerse their children in specific social settings that reinforce their religious commitments, for example Sunday school or church youth groups (Martin, White, & Perlman, 2003).

In terms of adolescent sexual attitudes behavior, the construct of vicarious learning may take various forms. Children receive sex education in school; they also learn about sex from their friends, their siblings, and the media. In families for whom religion plays an active role, parents are likely to communicate their understanding of their religion's teachings on human sexuality to their children; religiously-affiliated

schools, clubs, or other youth groups will then reinforce these messages, according to their faith tradition. In non-religious families, supervisory adults are still likely to have opinions on adolescent sexual activity; they may communicate those opinions in open conversations or via rules and behavioral restrictions. Adolescents in turn must absorb the various (and potentially conflicting) modeling they receive regarding expectations for their own sexuality, form their own opinions and beliefs, and then translate those beliefs into behavioral decisions.

The second construct of social learning theory, *differential reinforcement*, is directly related to vicarious learning through the mechanism of social norms; different social contexts (for example, an individual's family, his/her peer group, and his/her religious community) may model different norms related to a particular behavior. Particularly in terms of sexual attitudes and behavior, adolescents often receive conflicting messages. School-based sex education may be comprehensive, or teach an 'abstinence-only' curriculum, while family communication about sex and sex education may align with school-based lessons or completely contradict them. Peer group sexual norms may differ again, influenced not only by external exposures (like their own families, media, and the internet) but also by the behavior of one or more individuals within the group (Jaccard & Dittus, 2000; Jaccard, Dodge, & Dittus, 2002).

The varied social contexts that comprise the adolescent experience may also employ unique systems of motivation. Certain religious traditions advocate for the delay of sexual initiation until marriage; the popularity of 'virginity pledges' programs, which constitute a promise by the pledger to remain abstinent until marriage, has steadily risen in the past two decades (Landor & Simons, 2014; Regnerus, 2007). This type of public

assertion of abstinence is often associated with positive reinforcement within a religious or geographic community; some pledgers even receive a wedding-like ring to symbolize their promise. Other religious communities focus their messaging on the immorality of certain sexual decisions or behaviors, using fear (rather than praise) as a motivator (Williams, Dodd, Campbell, Pichon, & Griffith, 2014). Families and peer groups also operate unique systems of reward and punishment as motivators of behavior. Adolescents develop within a regulated family structure, usually governed by some body of rules and involving the possibilities of reward (perhaps parental praise, increased trust, and/or greater freedoms) and punishment (parental mistrust or withdrawal of privileges). Outside of the home, the desire to achieve or maintain popularity and 'coolness' dominates much of adolescent peer interaction, with dreams of acceptance and fear of rejection looming large and constant.

When the time comes for adolescents to coalesce their different 'norms' into actual behavior, some confusion or contradiction is expected. Research demonstrates, for example, that though they do tend to be older than non-pledgers at sexual debut, a significant number of virginity pledgers still engage in premarital sex (Bearman & Bruckner, 2001; Landor & Simons, 2014), and may be at greater risk of negative sexual consequences (e.g. unplanned pregnancy or STIs) due to a lack of condom use at first sex and a higher likelihood of engaging in unprotected non-coital sexual encounters, including oral and anal sex (Brückner & Bearman, 2005; Landor & Simons, 2014).

The principle of differential reinforcement suggests that religious or family norms that lead to an adolescent's abstinent behavior may directly conflict with peer group norms that value sexual experimentation and experience and thereby increase, rather than

decrease, an adolescent's participation in sexual risk behavior. Perhaps an adolescent's fear of punishment or parental (or divine) disapproval may lead them to eschew the possibility of having a sexual encounter; when their attendance at a social event leads to just such an encounter, the teen is likely not to be prepared, either physically (e.g. to have condoms) or emotionally (e.g. to say 'no' if the encounter is unwelcome, or to have a frank conversation about safety if the encounter is in fact welcome).

The third construct of social learning theory, *reciprocal determinism,* suggests that individuals are not passive recipients of information. Rather, an individual's thoughts, social contexts or environment, and behavior exert reciprocal influence on one another. For example, an adolescent raised in a religious family environment may internalize safe sex messages from school or the media, then engage his parents or friends from within his religious tradition in conversation about these topics. The trajectory of these communications may then impact his/her understanding of personal faith, his/her relationships with family or friends, or his/her personal opinions about sexual behavior; the child may have newly reinforced convictions, or his/her attitudes and behaviors might completely change. The ongoing, reciprocal exchange of thoughts, actions, and interactions is central to an understanding of the application of social learning theory to family and religious socialization and to adolescent sexual behavior.

Bandura's social learning theory is most often applied in family science to studies of younger children; child development research has firmly established the importance of family and parental modeling of beliefs and behaviors in children's physical, cognitive, and social emotional development. In his original work, however, Bandura did not limit the theory's application only to children. Rather, he used broader language to describe a

theory of human behavior as governed by direct experience, observation of others, and a system of rewards and punishments (Bandura, 1971). Arnett's identification of emerging adulthood as a separate and distinct developmental period, governed by self-exploration and identity formation and derived from changing external influences on behavior, provides rationale for the application of social learning theory to the beliefs and behaviors not just of children but of this new identified group of emerging adults. This study attempts to enhance our understanding of 'social learning' in the context of older adolescents and emerging adults, and to identify myriad potential avenues of influence on the religious and sexual attitudes and behaviors of this particular cohort.

**Research Hypotheses**

Guided by the principles of social learning theory, the current study examined potential pathways of influence from family religiosity and family sex communication to college students' religiosity and sexual attitudes and behaviors. The study's quantitative research questions and related hypotheses are as follows:

**RQ1:** What are the relationships between family religiosity, student religiosity, parental monitoring, and college students' sexual risk and protective behaviors?

*Hypothesis 1.1:* Higher family religiosity will be associated with lower sexual activity (older age at first sex and lower number of lifetime partners) and higher sexual risk behaviors among college students (lack of contraceptive use, infrequency of condom use, use of alcohol or drugs before sex, and lack of HPV vaccine compliance).

*Hypothesis 1.2*: Higher family religiosity will be associated with higher student religiosity.

*Hypothesis 1.3*: Higher family religiosity will be associated with more conservative student attitudes about sex.

*Hypothesis 1.4:* As student religiosity increases, so do the associations between family religiosity and student sexual behaviors.

*Hypothesis 1.5*: The association between family religiosity and student sexual activity will be stronger when students have more conservative attitudes about sex.

*Hypothesis 1.6:* The association between family religiosity and student sexual risk behaviors will be weaker when students have more conservative attitudes about sex.

*Hypothesis 1.7:* Higher family religiosity will be associated with higher levels of parental monitoring.

*Hypothesis 1.8:* Higher parental monitoring will be associated with lower sexual activity and greater sexual risk, even when controlling for family religiosity.

**RQ2:** What are the relationships between family communication about sex during adolescence, college students' attitudes about sex, and college students' sexual risk and protective behaviors?

*Hypothesis 2.1:* Less positive family sex communication will be associated with lower student sexual activity (older age at first sex and lower number of lifetime partners) and higher student sexual risk (lack of contraceptive use, infrequent condom use, use of alcohol or drugs before sex, and lack of HPV vaccine compliance).

*Hypothesis 2.2:* Less positive family sex communication will be associated with more conservative student attitudes about sex.

*Hypothesis 2.3:* Students who report more conservative attitudes about sex will have lower sexual activity and higher sexual risk, even when controlling for family sex communication.

**RQ3:** What are the underlying mechanisms or factors driving the relationships between and among family religiosity and family communication about sex, students' religiosity and students' sex attitudes, and students' sexual behaviors?

**Chapter III: Methodology**

This study used a cross-sectional survey design to explore how family religiosity and family attitudes about sex, as communicated during childhood and early adolescence, relate to college students' current religiosity, their attitudes, and their sexual risk and protective behaviors.

**Population**

Participants for this study were a convenience sample of undergraduate students at the University of Maryland College Park (UMD). For the 2016-2017 academic year, the university reported 28,472 undergraduate students, 76.6% of whom were Maryland residents and 23.4% of whom were non-Maryland residents (UMD, 2017). Fifty-three % of the undergraduate population was male, and 47% female. By race/ethnicity, undergraduate enrollment was as follows: 50.3% White, 16.3% Asian, 12.9% Black or African American, 9.7% Hispanic/Latino, 4.2% two or more races, 0.1% American Indian or Alaskan native, 0.1% Native Hawaiian/Pacific Islander, 4.6% foreign, and 1.7% race/ethnicity unknown (Forbes, 2017).

**Data Collection Procedure**

The UMD Institutional Review Board (IRB) approved all study procedures before data collection began.

**Marketing & Recruitment.** A variety of marketing strategies were used in order to build awareness of the study and to recruit student participation. As recommended by Dillman, Smyth, & Christian (2009), an initial 'prenotice' of the survey was sent via email (see *Appendix A*) to the presidents or chairs of 63 student religious organizations

and 73 student cultural and/or political organizations at UMD. This email explained the purpose of the study, identified the particular student group as a desired source of recruitment, and asked the president to consider sharing the online survey link with the group's membership. As can be seen in *Appendix A*, passive consent procedures were used with respect to obtaining permission for future contact with the leader of the student group; the email asked the group representative to reply via email if they were unwilling to receive the survey link and/or to share the link with their members. None of the group representatives requested to opt out of future communication; in addition, multiple representatives replied to the email to express active desire to participate in the study, and to offer other points of contact for further recruitment.

Via email, faculty and graduate instructors in the Department of Family Science were asked to promote study participation among the students in their classes (see *Appendix B* for the email text). Suggested options for integrating the survey into course credit options, including as a discussion board post, as fulfillment of a class participation requirement, or as extra credit, were included in the email request.

After UMD IRB approval was obtained, an email flyer advertising the study was created and distributed to each of the above-mentioned student groups; the flyer contained a description of the study, a direct link to the online survey, and an invitation to contact me for further information. The email also encouraged students to share the link with their fellow undergraduates, with the hope that a degree of snowball sampling would occur, allowing the survey to reach students with whom I otherwise had no direct path for contact.

After permission of the relevant undergraduate coordinators, the flyer was also distributed via email to all undergraduate students in the School of Public Health (SPH). A graduate student colleague of mine in the School of Education distributed the survey to her own students, and shared it with her fellow graduate instructors for possible further distribution around that School. An undergraduate contact of mine (a teaching assistant in the Department of Family Science and a leader in her sorority) distributed the survey among her sorority and fraternity listervs, offering a potential inroad into the broad network of Greek societies on UMD's campus.

Finally, hard copies of the recruitment flyer were distributed around campus and displayed on community boards in the UMD Health Center, the Stamp Student Union, McKeldin Library, and in various classroom and dormitory buildings. In the School of Public Health, the flyer image was also featured on display screens throughout the building that highlight opportunities relevant to SPH students.

**Incentives.** The first 50 participants to complete the survey received a $15 e-gift card for Amazon, Starbucks, or iTunes (each participant chose which incentive to receive); all other participants were entered into a raffle drawing for a $100 e-gift card to one of the abovementioned vendors.

**Informed consent procedure.** Students who clicked on the survey link were directed to a description of the survey (see *Appendix D*) as well as language recommended by the UMD IRB for informed consent, including the purpose of the research, a guarantee of anonymity, and a statement about potential risks. Participants were reminded that participation is voluntary, and that if they stopped the survey at any

time, their responses would not be recorded; a click to enter the survey equated to consent to participate.

      **Confidentiality.** Qualtrics generated an anonymous, shareable link to the survey. The only information stored by the system, other than the actual survey responses, was the internet IP address from which each participant accesses the survey; this information was only retained for the duration of time the survey link was active, and was used only as an effort to prevent a single participant from taking the survey more than once. Per UMD IRB recommendation, the informed consent statement above included the phrase "the surveys are anonymous and will not contain information that may personally identify you". Confidentiality reminders were also included at multiple points throughout the survey.

      At the end of the survey, in order to maintain the confidentiality of responses, participants were redirected away from the survey website to enter their name and email for entry into the incentive raffle. The Google form began with a reminder of the confidentiality of the student's survey responses, and reassured the participant that survey responses could not be linked to the names in the form. Participant contact information was entered in random order, so that any identifying information could not be linked to individual survey responses. The Google form also offered students to enter the department and course number for any courses that had offered credit for participation in the study.

**Research Measures (*Appendix E*)**

      Each measure described below was chosen through a comprehensive review of the literature; the survey itself was designed in Qualtrics, based on Dillman and

colleagues' (2009) principles of research design for an online platform. The completed survey was then piloted with a group of five undergraduate student volunteers, each of whom took the survey (four on a traditional web browser, one on the new mobile phone platform) and then met with me one-on-one to discuss the mechanics of the survey. Based on feedback from this pilot group, items were removed to shorten the length of the survey, the order of the measures was slightly rearranged, two problems with the survey's 'skip logic' were addressed, and a few word choice decisions were reconsidered.

**Demographic Variables.** Information on a variety of descriptive individual and family characteristics was collected from each participant, to serve as possible control variables; based on bivariate analyses and collinearity, decisions were made about whether or not to include each control variable in the final analytic model.

*Age and Gender.* Participants self-reported their current age and gender. Because only three participants described themselves as transgender, these three participants were dropped from future analyses.

*Race.* Participants self-reported their race/ethnicity, selecting all that apply from a list of options, including American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, Hispanic or Latino, White, or Other (with an option to specify). In order to reduce the number of categories, this variable was later recoded to White, Black/African American, Hispanic/Latino, Asian, and Other (which includes any participants who chose two or more races).

*Religion.* Participants were asked to select their current religion from a list, including Roman Catholic, Orthodox, Protestant, Jewish, Muslim, Hindu, Buddhist, Mormon, Other (with an option to specify), or None. A follow-up question asks whether

or not the religion they chose in the previous question is also their parents' religion; if 'no', participants were asked to report their parents' current religion. For analytical purposes, responses on this variable were coded as Roman Catholic, Christian (non-Catholic), Jewish, Muslim, Other Non-Christian, or Atheist/Agnostic.

*Year in College.* Participants reported their current year in college, choosing from the options Freshman/First Year, Sophomore/Second Year, Junior/Third Year, Senior/Fourth Year, and Fifth Year or higher.

*Marital Status.* Participants chose from the options Single, Married, Separated/Divorced, or Unmarried & Cohabiting.

*Sexual Relationship Status.* Participants reported the status of their current sexual relationship. Answer options included no current sexual relationship, one casual partner but no serious partner, a monogamous serious partner, a non-monogamous serious partner, or multiple casual partners but no serious partner. For analytic purposes, responses on this variable were coded as no current sexual relationship, one casual partner, one serious (monogamous) partner, or multiple partners.

*Parents' Education.* Participants reported the highest level of education completed by their parents (separate questions for mother and father). Answer options included some high school, high school graduate, some college, trade/technical/vocational training, college graduate, some postgraduate work, postgraduate degree, and not sure. From data collected on this variable, a new dichotomous variable classifying whether or not the student was a first generation college student was created.

*Parents' birthplace.* Participants chose from three options: both parents were born in the U.S., one parent was born outside the U.S., or both parents were born outside the US. This variable was later dichotomized to capture whether a student had both parents born in the U.S., or at least one parent born outside the U.S.

*Household composition during high school.* To identify who lived in the participant's household during his or her adolescence, respondents chose all that apply from a list of family members. From the data collected on this variable, two new dichotomous variables were created to capture whether or not the student lived in a single-parent household during high school, and whether or not the student lived in a multigenerational household (i.e. that grandparents lived in the home) during high school.

*Geographic location.* Participants self-reported the last place they lived before coming to UMD, choosing from a dropdown list of the 50 states, plus the District of Columbia and 'Outside the United States'.

**Family Religiosity.** Family religiosity was measured by the 9-item *Faith Activities in the Home Scale (FAITHS - short version)* (Lambert & Dollahite, 2010). Each of 9 family faith activities (e.g. family prayer, family religious conversations) was evaluated for both the frequency with which the respondent's family was involved in the activity, and for the importance of the activity in the family's religious life.

The original 18-item scale was developed first through a review of the literature, and next through qualitative interviews with two highly religious samples from the three major Abrahamic faiths (Christianity, Judaism, and Islam). Couples were interviewed together, then children joined in and the entire family was asked an additional set of questions (Lambert & Dollahite, 2010). Given the breadth of the *FAITHS* items, its

creators suggest it may best be used for research comparing the range of religious activities across faith communities.

The short version of the scale was developed in order to create a reliable and valid scale for broader use in quantitative research, and to explore the relevance of the *FAITHS* to younger and less religious samples. Nine items were dropped, either because they did not allow for a full range of response or because they were not relevant to many religious groups. With three samples of undergraduate students from a Southeastern university, the *FAITHS – short version* demonstrated adequate internal reliability and convergent and discriminant validity (Lambert & Dollahite, 2010).

Internal consistency was strong in all three samples: $\alpha = 0.88$, $\alpha = 0.92$, and $\alpha = 0.94$. A subset of the overall sample was used to explore test-retest reliability; over a 3-week period, the correlation between time points ($r = 0.86$, $p < 0.001$) demonstrated strong test-retest reliability. Factor analyses of each sample indicated that the *FAITHS* has only one factor. Results also indicated that the *FAITHS* has adequate construct validity, as both convergent and discriminant validity are present (Lambert & Dollahite, 2010).

Each of the 9 items is rated for frequency (0-6, 'never or not applicable' to 'more than once a day') and importance (0-4, 'not important or not applicable' to 'extremely important'). For analytic purposes, participants received a score (the summed total) for both frequency and importance; in the previous study, frequency and importance were highly correlated, so analyses were only presented for frequency (Lambert & Dollahite, 2010). The two scores, frequency and importance, were also highly correlated in this sample ($r = .853$, $p < .001$), so subsequent analyses used only the frequency score.

**Family Sex Communication.** Family attitudes and communication about sex were assessed using three subscales from the *Youth Asset Survey (YAS)* (Oman et al., 2002). The YAS was the product of a CDC-funded, community-based initiative designed to reduce teen pregnancy and related youth risk behaviors using positive youth development from an asset-building approach; the final survey evaluates ten youth developmental assets, including Family Communication, Peer Role Models, Responsible Choices, Community Involvement, and Good Health Practices.

This study used two asset measures, both subscales of Family Communication (FC) that were developed through later refinement of the survey. The first subscale, family communication about sex (FCS), is comprised of 5 items, e.g. "most adults who are important to me think I should not have sex while I'm a teenager" (strongly agree/agree/disagree/strongly disagree) and "have you talked to your parents about delaying your sexual activity" (yes/no) (Aspy et al., 2007). The second subscale, related to sexual education in the home, uses 3 items, e.g. "have you ever been taught at home about the female menstrual cycle", "have you ever been taught at home how to say "no" to sex, and "have you ever been taught at home about methods of birth control" (Aspy et al., 2007). One of these items, 'have you ever been taught at home about the female menstrual cycle', was dropped from the scale before analyses were conducted because responses on this item differed widely along gender lines, predisposing male participants to receive a lower score on family sex education solely because of their gender.

The reliability and validity of the original FC domain has been evaluated in multiple studies with a Cronbach's alpha ranging between 0.61 and 0.74, intra-class correlation (ICC) = .75, and kappa = .53 (Oman et al., 2002; Oman, Vesely, Tolma, Aspy,

& Marshall, 2010). The total number of youth assets possessed has been shown to be protective against adolescent sexual risk taking (Oman, Vesely, & Aspy, 2005; Oman, Vesely, Aspy, McLeroy, & Luby, 2004; Vesely et al., 2004); the FC domain in particular has been associated with an increase in the use of birth control at last intercourse (Oman et al., 2005), as well as with delayed initiation of sexual intercourse and reduced risk of pregnancy (Oman et al., 2013). The second and third domains, related to family communication around sex and sex education in the home, have been evaluated in a follow-up study to the original YAS development study, with each item assessed individually in relation to youth sexual risk behaviors (Aspy et al., 2007). Items from both domains were significantly related to youths reporting ever having had sexual intercourse, number of sexual partners, and birth control use at last sexual encounter. For example, two items in the family communication about sex domain were significantly related to youth having had sexual intercourse, with students reporting communication about birth control use and STI prevention being more likely to have had sex. Two items from the sexuality education in the home domain were also significant, with youth who had been taught to say 'no' being less likely to report having had sexual intercourse, but youth who had been taught about birth control being more likely to report having had sexual intercourse.

Asset items containing a four-point response scale (e.g. family communication about sex items) are dichotomized (almost always/usually or strongly agree/agree vs. some of the time/almost never or disagree/strongly disagree), with positive responses (almost always/usually and strongly agree/agree) coded as 1 and other responses coded as 0. For items with a yes/no response, each 'yes' response was assigned 1 point (Aspy et al.,

2007). For analytic purposes, a total family sex communication score (score range: 0 to 11) was created by reordering and then summing each of the individual item scores, with a lower score indicating 'less comprehensive' or 'less open' family communication about sex.

**Parental Monitoring.** Parental monitoring was measured using a 9-item scale (Arria et al., 2008) that assesses respondents' perceptions of the level of monitoring and supervision they received during their last year of high school (Pinchevsky et al., 2012). For each item, e.g. "When you got home from school, how often was an adult there within the hour" and "When your parents were not home, how often would you text them or leave a note for them about where you were going", respondents select one response from a range of five levels of frequency – all of the time, most times, sometimes, hardly ever, or never. Each response has a corresponding number value, 1 to 5; a total parental monitoring score (score range: 3 to 36) was constructed by summing a participant's responses on all 9 items, with higher scores representing a higher level of parental monitoring. In two previous studies, this scale demonstrated good internal consistency, $\alpha$ = .75 (Pinchevsky et al., 2012) and $\alpha$ = .76 (Arria et al., 2008).

**Student Religiosity.** Student religiosity was measured using 4 domains from the *Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS)* (John E. Fetzer Institute, 2003): (1) Overall self-ranking / Religious Intensity (e.g. to what extent do you consider yourself a religious person?), (2) Private Religious Practices (e.g. how often do you pray privately in places other than at church, synagogue, or other place of worship?), (3) Forgiveness (e.g. I know that God forgives me), and (4) Organizational Religiousness (e.g. how often do you go to religious services?). The Fetzer Institute and the National

Institute on Aging developed the BMMRS with the specific goal of creating an assessment tool suitable for use in health research. The set of brief measures assesses both distal and functional religiousness and spirituality (R/S) domains that are believed to be most proximal to health (S. K. Harris et al., 2008; John E. Fetzer Institute, 2003).

The BMMRS, or isolated domains within it, has been used in multiple studies of adults, including the national 1998 General Social Survey, and showed appropriate internal reliability across domains (α ranging from .54 to .91) (John E. Fetzer Institute, 2003). Previous studies have established high internal reliability for each subscale of the BMMRS, ranging from .71 to .87 (Kendler et al., 2003; Mokuau, Hishinuma, & Nishimura, 2001; Pargament, K. I., Koenig, H. G., & Perez, 2000; L. G. Underwood & Teresi, 2002; Yoon & Lee, 2004). Further research has used exploratory and confirmatory factor analysis to demonstrate construct validity across a variety of populations, including adolescents (S. K. Harris et al., 2008) and college students (Masters et al., 2009; Stewart & Koeske, 2006).

Each item in the BMMRS uses Likert scale response options, with lower scores indicating a greater 'amount' of the item being measured (e.g. closeness to God). Each subscale receives a separate score; for analytic purposes, the subscale scores can be used individually, or summed together for a total religiosity score. For ease of interpretation, scores on each domain were recoded so that lower scores indicate a lower 'amount' of the item being measured.

**Student Sex Attitudes.** Student attitudes about sex were measured using the 23-item *Brief Sexual Attitudes Scale (BSAS)* (C. Hendrick, Hendrick, & Reich, 2006). Items represent four dimensions of attitudes towards sex: Permissiveness (casual sexuality),

Birth Control (responsible, tolerant sexuality and sexual practices), Communion

(idealistic sexuality), and Instrumentality (biological, utilitarian sexuality).

The *BSAS* is an abbreviated version of the 43-item *Sexual Attitudes Scale (SAS)* (S.

Hendrick & Hendrick, 1987) which was developed in the early 1980s in an effort to

identify a measure that assessed sexual attitudes in a multidimensional way. Using data

from 835 initial university student respondents, plus two replication studies with 1,374

student respondents, the authors used principal components analysis with varimax

rotation to guarantee conceptual independence among the four subscales defined by the

final 43 items. The *SAS* has since been widely used in research on sexual attitudes and

other sexuality-related topics, including understanding the driving forces behind the

success or failure of romantic relationships (C. Hendrick & Hendrick, 1988), examining

gender difference in sexual attitudes (S. Hendrick & Hendrick, 1995), cultural differences

in the sexual attitudes of married couples (Contreras, Hendrick, & Hendrick, 1996), and

the relationship between personality and sexuality (Shafer, 2001).

To design the shorter, updated version (the *BSAS*), analyses were conducted on

three data sets, including two existing data sets using item subsets from the original 43-

item scale, and one study using only the brief version, in order to determine the

psychometric comparability of the *BSAS* to the original scale (C. Hendrick et al., 2006).

The 23 items that were retained loaded highly on their respective factors, and low on the

other three factors. Internal consistency was strong across the three studies for all four

subscales: Permissiveness ($\alpha = .94$), Birth Control ($\alpha = .86$), Communion ($\alpha = .74$), and

Instrumentality ($\alpha = .78$).  A subset of students was used to determine test-retest

reliability; over a one-month period, the correlations between time points were as

follows: Permissiveness: $r = .92$, Birth Control: $r = .57$, Communion: $r = .86$, and

Instrumentality: $r = .75$. Though the test-retest correlation for Birth Control is low, the

authors suggest that it accurately reflects the ambivalence and inconsistency among

college students in their use of birth control, as well as in their attitudes about using it (C.

Hendrick et al., 2006).

Each item on the BSAS is rated on a five-point Likert scale ranging from strongly

agree to strongly disagree, with associated score options of 1 to 5, and lower scores

representing a larger 'amount' of the attitude. Each participant receives 4 scores, one for

each 'attitude' type. For ease of interpretation, scores on each attitudes domain were

recoded to include 0 as an option and reversed so that lower scores represent less of the

attitude.

**Student HPV Knowledge.** Two items were included to assess students'

knowledge of the vaccine to protect against human papillomavirus (HPV), e.g. "have you

heard of the vaccine to prevent HPV" (yes/no) and "who should receive the HPV vaccine"

(all girls, all boys, all girls and all boys, anyone who is sexually active, no one) (Kahn,

Rosenthal, Hamann, & Bernstein, 2003; Shelton et al., 2013).

**Student Sexual Behaviors.** The primary outcome variables of student sexual risk

and protective behaviors were measured using the 9-item sexual behaviors scale from the

2015 *Youth Risk Behavior Survey (YRBS)* (CDC, 2015a). The YRBS was developed in

1990 as part of the *Youth Risk Behavior Surveillance System (YRBSS)*, which monitors

priority health risk behaviors among youth; the sexual behaviors subscale evaluates

sexual behaviors that contribute to unintended pregnancy and sexually transmitted

infections, including HIV infection (CDC, 2016a). The National Youth Risk Behavior

Survey (YRBS) includes a nationally representative sample of 9th through 12th grade students; the surveys are conducted every two years. From 1991 through 2015, the YRBSS has collected data from more than 3.8 million high school students in more than 1,100 separate surveys.

The YRBS Data User's Guide (CDC, 2016) provides detailed information on the construction of suggested categorical variables to capture sexual risk and protective behaviors, e.g. variables for "multiple sex partners", for "sex before age 13", and for "dual birth control methods"; it also contains specific guidelines for the appropriate numerator and denominator for each variable. For example, for the variable 'condom use', the value represents the percentage of students who used a condom during last vaginal intercourse, but only among those students who previously reported currently having had vaginal intercourse.

In addition to the YRBS items, participants were asked additional questions about whether or not they have ever had oral sex or anal sex (two common college student behaviors identified in the literature as sexual risk because of the infrequency of condom use associated with these behaviors); if they answered yes, participants were next prompted to report whether or not they had ever had the previously reported sexual encounter (oral and/or anal sex) without using a condom. An additional variable, 'only oral', was created to capture any participants who reported having had oral sex but not having had vaginal or anal sex.

Questions about the accuracy of self-reported data for adolescent risk behaviors have long been a concern for social science researchers. Previous studies have shown the validity of adolescents' self-reported sexual behavior (Davoli, Perucci, Sangalli, Brancato,

& Dell'Uomo, 1992; Orr, Fortenberry, & Blythe, 1997; Schrimshaw, Rosario, Meyer-Bahlburg, & Scharf-Matlick, 2006; Shew et al., 1997), but a review of the literature calls attention to multiple recommendations for improving the reliability of adolescents' self-report in a given study. The current study attempts to take into account many of these recommendations.  To reduce socially desirable responding, the survey was administered through an anonymous online link. A guarantee of participant confidentiality was repeated before each set of 'sensitive' questions, and the need for accurate reporting for the improvement of knowledge about college students' health was stressed multiple times throughout the survey (Ralph J. DiClemente, 2015; Weinhardt, Forsyth, Carey, Jaworski, & Durant, 1998).

Three items on vaccination against human papillomavirus (HPV) were also included.  First, students reported whether or not they have received the HPV vaccine. If 'no', they were asked to report their likelihood of receiving the HPV vaccine in the next 12 months. If 'yes', were asked if they have completed all 3 recommended doses; if 'no', students then received the 'how likely' question.  Based on their responses, students were categorized as 'decided against' (for 'extremely unlikely and moderately unlikely' responses), 'undecided' (for 'slightly unlikely', 'neither likely or unlikely', and 'slightly likely' responses), 'intent to vaccinate' (for 'moderately likely and 'extremely likely' responses), or 'already vaccinated' (Shelton et al., 2013). Finally, students answered one question about STI diagnosis, and at least one additional question about pregnancy, "Have you ever been pregnant or gotten someone pregnant?" If 'yes', participants were prompted to answer "how many times?", and for each pregnancy, "were you hoping to get pregnant at that time?" and "how did the pregnancy end?"

**Qualitative Component.** In addition to the quantitative measures described above, the survey contained three open-ended text response questions that seek to further inform my understanding of the relationship between college students' report of family and individual predictors and their actual thoughts and behaviors. These text responses have the potential to enhance the proposed study in two ways: first, by offering a type of passive member checking, whereby I can determine if the qualitative responses verify (or contradict) the respondent's quantitative item responses; and second, by providing an opportunity for the students' *perceptions* of the relationships between religiosity, family communication, attitudes, and sex to be included in the study. The questions were scattered throughout the body of the survey, rather than being grouped together, in order to reduce the likelihood of responder fatigue, and were specific in their language, in order to reduce the likelihood of receiving vague or noncommittal answers. Each qualitative item followed relevant quantitative items, asking the respondent to reflect further on a specific topic that was already at the forefront of their mind. Please see *Appendix F* for text of the exact questions asked.

**Data Analysis Plan**

**Power Analysis**

An adequate sample size is necessary in order to obtain appropriate statistical power, that is, the probability, of detecting an effect, given that the effect is actually present. Power analyses were conducted using G*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007) to determine the sample size needed to test this study's hypotheses; effect sizes were estimated based on previous literature related to adolescent sexual behavior outcomes (Lefkowitz et al., 2004; van de Bongardt, Reitz, Sandfort, & Dekovic, 2014;

Zimmer-Gembeck & Helfand, 2008). For a $X^2$ goodness-of-fit test with a small effect size

(0.3), a desired alpha level of 0.05, a power level of 0.95, and 16 degrees of freedom (the

maximum for any two of our predictor variables), it was determined that the minimum

number of participants was 317. For logistic regression with categorical predictors, with a

small effect size (0.3), a desired alpha level of 0.05 and a power level of 0.95, it was

determined that the minimum number of participants needed was 159. For exploratory

factor analysis, or for future testing model fit for a structural equation model, general

convention states that sample size should not be less than 200 (Kline, 2016; Pett, Lackey,

& Sullivan, 2003); using the 10:1 convention for needing at least ten participants per

variable or item (in this case a maximum of 55 individual survey items), the minimum

sample size needed would be 550. Online surveys were collected from 684 undergraduate

students; cases with too many missing data were removed (n = 72), as were four cases

representing outliers in terms of age (and therefore, for the purposes of this study, in

terms of college life experience), resulting in the final analytic sample, n=608.

**Analytic Plan**

Data analysis was conducted in SPSS v24 (IBM, 2016) and Mplus v8 (Muthen &

Muthen, 2017). Preliminary frequencies and descriptive statistics were performed.

Because of the categorical nature of the dependent variables of sexual risk and protective

behaviors, hierarchical logistic regression models were used to test the hypotheses for

research questions (RQs) 1 and 2. Odds ratios were evaluated to determine whether each

predictor bears a significant and independent relationship to the outcome of interest.

Frequency distributions for each variable were evaluated to determine whether

continuous scores or categorical versions of predictors would be used in the analyses. Though continuous variables are generally preferable, because continuous data offer the opportunity for inferences to be made with fewer data points as well as greater sensitivity to variation, a categorical version may be necessary if the data are not normally distributed on these variables.

To test for moderation under RQ1, I first determined that the independent and moderating variables are not too highly correlated, which could cause collinearity issues. I then analyzed the direct relationship between family religiosity and student sexual behaviors, and the potential moderating effects of student religiosity and student sex attitudes on that relationship. I also examined the potential mediating effect of parental monitoring on this relationship (details of mediation analyses are described below, under tests for RQ2).
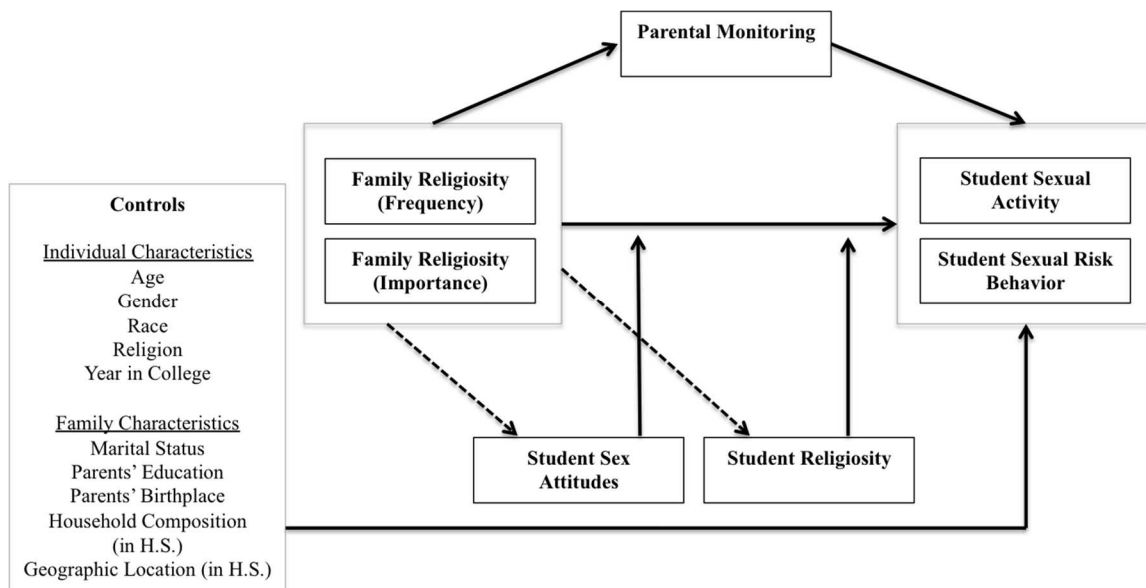


Figure 1. Analytical model for <u>Research Question 1</u>: Family religiosity as predictors of student sexual activity and student sexual risk behavior, moderation effect of student religiosity and student sex attitudes, and mediation effect of parental monitoring.

As outlined by Baron & Kenny (1986), a test of mediation involves three distinct and ordered steps. To test for mediation under RQ2, student sexual behaviors were regressed on family sex communication using hierarchical logistic regression. Next, student sex attitudes were regressed on family sex communication. Finally, student sexual behaviors were regressed on student sex attitudes and family sex communication. In order to assert that student sexual attitudes do in fact mediate the relationship between family sex communication and student sexual behavior, the direct effect of family sex communication on student sexual behaviors must be reduced in the third regression equation.
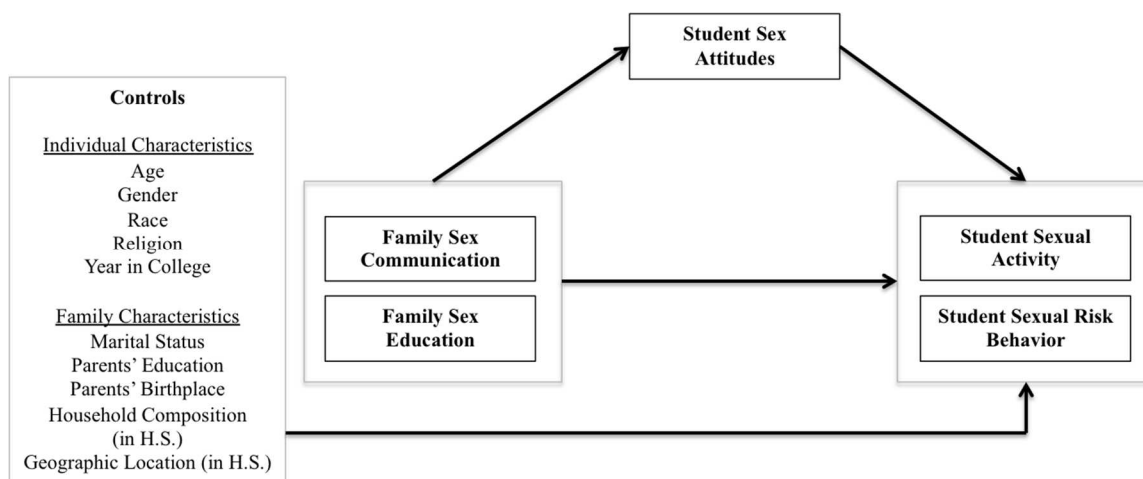


Figure 2. Analytical model for Research Question 2: Family sex communication as predictors of student sexual activity and student sexual risk and protective behaviors, and the mediation effect of student sex attitudes.

To test the impact of potential control variables for RQs 1 and 2, separate logistic regression models were constructed, and student sexual behaviors were regressed first on the control variables only, and then on the control variables together with predictor and mediating variables.

For RQ3, exploratory factor analysis (EFA) was used to explore the potential underlying structure of the set of study variables. The primary goal of EFA is to examine the underlying relationships among measured variables by identifying latent constructs, or factors, that underlie the larger set of measured survey items. EFA is intended for use with no *a priori* assumptions about the number of factors that might be necessary to explain the set of variables; it works best on a large set of variables and with a large sample size (Pett et al., 2003). For this study, it was proposed that measured items related to family religiosity, family sex communication, and parental monitoring may reflect a broader variable of family influence, while measured items related to students' religiosity and students' attitudes about sex may reflect a broader construct of independent student influence. It was also proposed that students' report of actual sexual behaviors, both activity and risk, may reflect broader openness to sexual activity.

Two methods of factor extraction, principal axis factoring (PAF) and maximum likelihood estimation (ML), were used to determine the best fitting factor model for these data; the 'best fitting' model is the most parsimonious by explaining the maximum amount of common variance in the data's correlation matrix using the smallest number of explanatory factors (Field, 2013). Both methods have unique advantages – PAF is less likely than ML to produce an improper solution, but ML provides a wider range of goodness-of-fit indices. Both methods computed eigenvalues based on the communalities between variables; these eigenvalues demonstrate the substantive importance of the factors, and were used, in combination with a scree plot, to determine the number of factors to be extracted.  Once this decision was made, the factor loadings, or the correlations between individual items and a given factor that describe the relative

contribution that a variable makes to a factor, were assessed in order to determine which variables most represented which factor.
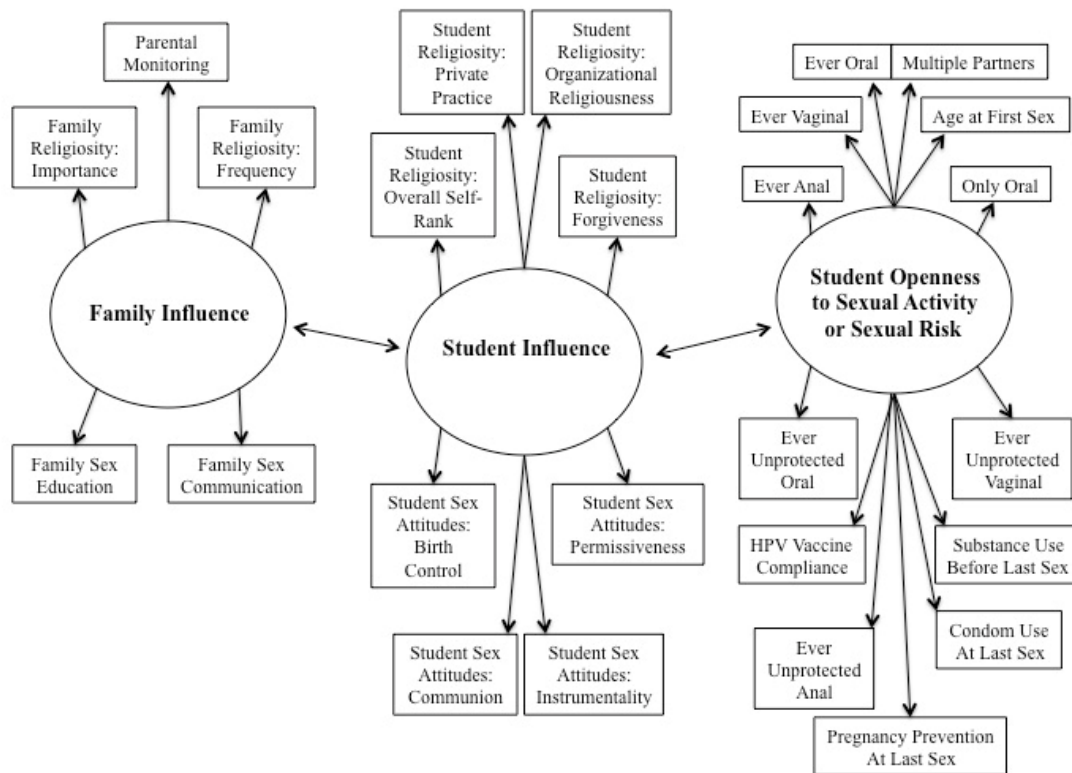


Figure 3. Hypothesized factor model for Research Question 3.

**Chapter IV: Results**

This chapter presents a detailed description of the data used in the present study, organized by level of analysis and by research question.  First, an overall description of the study sample is provided and descriptive statistics are presented for the variables of interest. Second, bivariate analyses examining the relationships between each independent variable and covariate with the dependent variables of sexual activity and sexual risk are described by research question. Finally, the results of hierarchical logistic regression procedures to test the hypotheses under research questions 1 and 2 are presented.

**Sample Description**

As previously described, the participants for this study are a convenience sample of undergraduate students at the University of Maryland College Park (UMD), drawn primarily from the School of Public Health, the College of Education, and the College of Behavioral and Social Sciences. Online surveys were collected from 684 undergraduate students; cases with too many missing data were removed (n = 72), as were four cases representing outliers in terms of age (and therefore, for the purposes of this study, in terms of college life experience), resulting in the final analytic sample, n=608.

**Univariate Analyses**

**Individual & Family Characteristics.** Demographic characteristics of the analytic sample are presented in Table 1 (p.169).  Nearly 77 percent (n=467) of the sample identified as female, and slightly more than half (n=318, 52.3%) as White, with a median age of 21 years old. The majority of respondents (n=395, 65%) were in their third or fourth year of college and identified as heterosexual (n=545, 89.6%). Religious

affiliation was distributed across six separate groups, with a majority of the sample identifying as Christian (non-Catholic) (n=158, 26.2%), Roman Catholic (n=136, 22.5%), or Atheist/Agnostic (n=130, 21.4%).

Students were most likely to describe themselves as being currently uninvolved in a sexual relationship (n=253, 41.6%) or involved with one serious (monogamous) sexual partner (n=244, 40.1%). Nearly half of the sample had one or both parents born outside of the United States (n=269, 44.2%), and 22 percent (n=131) were first generation college students.

When compared to the broader UMD undergraduate student population, this sample is unique in some ways and representative in others. Though the UMD undergraduate population is 53% male, only 23% of this survey's respondents were male; this skew in the sample may be a function of the survey's subject matter, or of the specific schools on campus from which the majority of the study's participants were drawn. In 2017, twenty percent of the UMD student population were first generation college students, as compared to twenty-two percent in this sample. Data is not currently available on students' religious affiliation or parents' immigrant status at the university level, but the high percentage in the sample of students with at least one immigrant parent was surprising, and seems likely to be higher than the university distribution.

**Independent Variables.** Tables 2 & 3 (p.171-174) present descriptive statistics for family religiosity, family sex education, and family sex communication.

*Family Religiosity.* Overall, students reported low family religiosity during their childhood and adolescence, in terms both of the frequency and the importance of family faith activities (including family prayer, family reading of scripture or other religious

texts, family singing or playing religious music, family religious gatherings or celebrations, family use of religious media, family religious conversations at home, saying a blessing or prayer before family meals, parents praying with children or listening to a child's prayers, and parents praying together). The mean *FAITHS* frequency score was 10.56 (possible scores ranged from 0 to 54, with a higher score indicating greater frequency); the mean *FAITHS* importance score was 9.63 (possible scores ranged from 0 to 36). Because the two scores were highly correlated ($r = .853$, $p < .001$), and because of a larger amount of missing data on the *FAITHS* importance scale, only the *FAITHS* frequency score was used in subsequent analyses. Diagnostic tests for normality revealed that the continuous variable for *FAITHS* frequency was positively skewed; this score was therefore transformed into a categorical variable with two groups (Never/Infrequent and Frequent) for subsequent analysis. Average scores in the 'never' or 'yearly' category were categorized as 'infrequent' (61%); average scores in the 'monthly' category or higher were categorized as 'frequent' (39%).

*Family Sex Education & Communication.* Participants' report of family sex education (mean score = 0.95, score range from 0 to 2) and of family sex communication (mean score = 4.38, score range from 0 to 9; see table 3, p.174) indicated widely varied degrees of communication depending on the specific sexual subject matter. Nearly 61 percent of students (n=369) had discussed with their parents "what is right and wrong in sexual behavior", but only 40 percent (n=245) had discussed STI prevention and only 25 percent (n=154) had discussed the student delaying participation in sexual activity. Gender differences were also prevalent in the distribution of these variables – for example, only 26 percent of males (n=36) reported ever having talked to their parents

about birth control, as compared to 67 percent of females (n=314), while 56.5 percent of females (n=264) and only 33 percent of males (n=46) reported having been taught at home "how to say 'No' to sex".

Separate total scores for family sex education and family sex communication were positively correlated with one another ($r = .492, p < .001$), and with the combined total score for family sex education and communication ($r = .729, p < .001$ and $r = .955$, $p < .001$, respectively). In the interest of building parsimonious models in subsequent analyses, only the combined total score for family sex education and communication was used.

**Potential Mediators and Moderators.** Tables 4, 5, & 6 (p.175-184) present descriptive statistics for potential mediating and moderating variables.

*Parental Monitoring.* Overall, students reported a moderate to high degree of parental monitoring during high school (mean score = 23.29, score range from 3 to 36). In particular, monitoring activities related to communication between parents and adolescents were common, with 75 percent of respondents (n=446) reporting that they always or almost always told their parents (before going out) when they would be back, and nearly 73 percent (n=425) reported always or almost always sending a text or leaving a note about their whereabouts if they went out while their parents were not at home (see Table 4, p.175). An independent samples *t*-test confirmed expected gender differences in parental monitoring, with female students reporting a higher degree of parental monitoring (M = 23.98, SD = 6.673) than male students (M=20.73, SD = 6.463), $t(456) = -4.385, p < .001$.

*Student Sex Attitudes.* Descriptive statistics for the four domains of student sex attitudes as well as for total sex attitudes scores are presented in Tables 5.1 & 5.2 (p.177 & 181). Higher scores on each domain of student sex attitudes suggest a 'greater amount' of the attitude, or more open attitudes about sex and sexuality. The degree of openness in students' sex attitudes varied from subscale to subscale, with students overall scoring highest on the Birth Control domain (mean score = 10.37, score range 0 to 12). A subsequent independent samples *t*-test revealed significant gender differences on the Birth Control domain score for males (M = 9.83, SD = 2.180) and females (M=10.52, SD = 2.308), *t*(598) = 3.103, *p* = .002, suggesting that female students in this sample have stronger feelings of individual responsibility for birth control use than do male students.

*Student Religiosity.* Scores on each of the four domains of student religiosity, as well as total student religiosity scores, were low to moderate (see Table 6, p.182), indicating a low overall degree of religiosity in this sample. In particular, students reported low levels of 'private practice', including private prayer (mean = 9, score range 0 to 35) and of 'organizational religiousness', including attendance at religious services and participation in organized religious activities (mean score = 2.79, score range 0 to 10).

**Dependent Variables.** This study examined thirteen outcome variables of interest, including six related to sexual activity and seven pertaining to specific sexual risk behaviors. Table 7 (p.185) provides descriptive statistics for each of these outcome variables. Overall, students reported high levels both of sexual activity and of sexual risk. Seventy-eight percent of students (n=478) reported ever having had oral sex; of those, 96 percent (n=460) have had oral sex at least one time unprotected (meaning that neither the student nor their partner used a condom). Seventy-two percent of respondents (n=438)

reported ever having had vaginal sex; of those, nearly 85 percent (n=371) have had vaginal sex at least one time unprotected. Only 23 percent of participants (n=142) reported ever having had anal sex, but of those, nearly 75 percent (n=106) have had anal sex unprotected at least one time.

Among students who have had vaginal sex, 87.9 percent (n=385) report that they or their partner used some effective method of pregnancy prevention at last vaginal sex (methods considered effective include condoms; hormonal birth control methods such as birth control pills, shots, patches, or rings; and long acting reversible contraception (LARCs) such as the implant or an IUD). However, only 44 percent (n=196) report that they or their partner specifically used a condom at last vaginal sex, suggesting that prevention against sexually transmitted infections represents a lower priority for students than does prevention against pregnancy.

Among students who have participated in any sexual activity (oral, vaginal, or anal), more students (n=282, 57%) delayed their first sexual activity until age 17 or later and slightly more than half (n=276, 56%) have had four or more sexual partners. Sixty-four percent of participants (n=394) had received at least one dose of the HPV vaccine; of those, 83 percent (n=329) had completed all recommended doses.

Female and male students did not differ significantly in their responses to any of the six sexual activity outcome variables. However, two of the seven risk outcomes did show significant differences by gender. The proportion of male students who reported substance use before last sex was significantly larger than the proportion of female students who reported substance use before last sex. For HPV vaccine compliance, the proportion of female students who reported having received the vaccine was significantly

larger than the proportion of male students who reported having received it, while the proportion of male students who reported being unsure of their HPV vaccine status was significantly larger than the proportion of females who reported being unsure.

**Bivariate Analyses**

In order to examine bivariate relationships among the study variables, Pearson's correlations were obtained for all continuous variables of interest, and chi-square tests were performed on all binary independent variables and covariates with each dependent variable of sexual activity or sexual risk. Results of these analyses are presented in Tables 8-20, 23, & 24.

**Covariates.** Each covariate had a statistically significant relationship with at least one outcome variable, with the exception of 'multi-generational household during high school'. One covariate, 'sexual relationship status', was statistically significantly related to each of the 13 outcome variables. Relationships between covariates and each outcome variable are presented in Tables 8 & 9 (p.189-201).

**Research Question 1.** This study's first research question assessed the relationships between family religiosity, students' religiosity, parental monitoring, and college students' sexual activity and sexual risk behaviors. Associations between family religiosity and the dependent variables of sexual activity and sexual risk were computed first for the total sample (Tables 10 & 11, p.202-205) and next were stratified by religious group (tables not shown). For sexual activity, students who reported frequent family religiosity were less likely ever to have had oral sex ($X^2 = 28.742$, $p < .001$), ever to have had vaginal sex ($X^2 = 25.757$, $p < .001$), and ever to have had anal sex ($X^2 = 5.934$, $p < .05$), than were those who reported infrequent family religiosity. In terms of sexual risk,

among students who reported ever having had vaginal sex, students who reported frequent family religiosity were less likely ever to have had unprotected vaginal sex ($X^2 = 4.490$, $p < .05$), but were also less likely to have received the HPV vaccine ($X^2 = 5.859$, $p < .05$) than were those who reported infrequent family religiosity.

After stratifying for religious group, associations between family religiosity and sexual activity showed that non-Catholic Christian ($X^2 = 5.535$, $p < .05$), Jewish ($X^2 = 15.568$, $p < .001$), and Muslim ($X^2 = 4.727$, $p < .05$) students who reported frequent religiosity were less likely ever to have had oral sex than were those who reported infrequent religiosity of the respective religion. Non-Catholic Christian ($X^2 = 5.808$, $p < .05$) and Jewish ($X^2 = 18.587$, $p < .001$) students who reported frequent family religiosity were also less likely ever to have had vaginal sex, and non-Catholic Christian students were also less likely ever to have had anal sex ($X^2 = 4.008$, $p < .05$). Among students who did report ever having had oral sex, Jewish ($X^2 = 4.403$, $p < .05$) and Other Non-Christian students ($X^2 = 8.161$, $p < .01$) who reported frequent family religiosity were more likely *only* to have had oral sex (meaning that they haven't also had vaginal or anal sex) than their counterparts who reported infrequent family religiosity. In terms of sexual risk, Roman Catholic students who reported frequent family religiosity were less likely to report substance use before last sex ($X^2 = 6.380$, $p < .01$).

In preparation for subsequent tests for mediation by parental monitoring, an independent samples t-test was conducted to compare the degree of parental monitoring experienced by students who reported infrequent vs. frequent family religiosity. There was a significant difference in the parental monitoring scores for infrequent ($M = 22.18$, $SD = 6.680$) and frequent ($M = 24.98$, $SD = 6.484$) family religiosity, $t(443) = -4.317$, $p$

< .001, with students reporting frequent family religiosity also reporting higher degrees of parental monitoring. Associations were also computed between the potential mediator of parental monitoring and the dependent variables of sexual activity and sexual risk (tables 12-14, p.205-208). Students who reported a higher degree of parental monitoring during high school were less likely to have had four or more lifetime partners (AOR = 0.959, 95% CI: 0.929, 0.989, $p$ = .008) and less likely ever to have had anal sex (AOR = 0.950, 95%CI: 0.920, 0.980, $p$ = .001). In terms of sexual risk, students who reported a higher degree of parental monitoring were more likely to have used a condom at last vaginal sex (AOR = 1.049, 95% CI: 1.014, 1.084, $p$ = .005) and to have used an effective method of pregnancy prevention at last vaginal sex (AOR = 1.075, 95% CI: 1.023, 1.131, $p$ = .005), and less likely ever to have had unprotected vaginal sex (AOR = 0.921, 95% CI: 0.874, 0.971, $p$ = .002).

Associations were also computed between the independent variable of family religiosity and the potential moderating variables, student sex attitudes and student religiosity (table 15.1, p.209). Independent samples t-tests were conducted to compare mean scores on students' sex attitudes and students' own religiosity by students who reported infrequent vs. frequent family religiosity. There were significant differences in student sex attitudes total scores for infrequent (M = 54.02, SD = 11.723) and frequent (M = 47.79, SD = 14.326) family religiosity, $t$(567) = 5.667, $p$ < .001). There were also significant differences in student religiosity scores for infrequent vs. frequent family religiosity, on every domain except students' overall self-ranking.

**Research Question 2.** This study's second research question investigated potential relationships between family sex communication, students' attitudes about sex,

and students' sexual activity and sexual risk behaviors. Associations between total family sex communication and the dependent variables of sexual risk and sexual activity were computed for the total sample using binary logistic regression; tables 16 and 17 (p.210-213) report the complete results of these analyses. For sexual activity, students who reported a higher total family sex communication score (meaning that their family sex communication was 'more comprehensive' or 'more open') were more likely to have been younger at first sexual contact (AOR = 0.901, 95% CI: 0.835, 0.973, $p$ = .008) and to have had more lifetime sexual partners (AOR = 1.144, 95% CI: 1.058, 1.237, $p$ = .001) than were students who reported less comprehensive family communication about sex. In terms of sexual risk, more comprehensive family communication about sex was associated with lower likelihood of being unsure (vs. sure) of having received the HPV vaccine (AOR = 0.786, 95% CI: 0.710, 0.870, p < .001).

In preparation for subsequent multivariate analyses, associations were computed between the potential mediator of students' sex attitudes and the independent variable of family sex communication (table 18, p.213). Only the 'communion' subscale score, which measures students' more idealistic view of sexuality as a "merging of two souls" or as "the ultimate human interaction", had a statistically significant relationship to the independent variable of family sex communication ($r$ = 0.087, $p$ = .033). Associations between the communion subscale and the dependent variables of sexual activity and sexual risk were also computed (tables 19 & 20, p.214-217).

**Multivariate Analyses - Tests of Hypotheses**

**Research Question 1**

This study's first research question examined the relationships between family religiosity and parental monitoring during adolescence, college students' attitudes about sex and self-reported religiosity, and college students' sexual activity, including risk and protective behaviors. Hypotheses 1.1 – 1.6 stated that students' attitudes about sex and students' own religiosity would moderate the relationship between family religiosity and students' sexual activity and sexual risk, with more conservative attitudes about sex strengthening the relationship between family religiosity and sexual activity, and weakening the relationship between family religiosity and sexual risks.

To test for moderation by student sex attitudes, hierarchical logistic regression was conducted for each sexual activity and sexual risk outcome variable. Each first model contained only relevant covariates; each second model added the independent variable of family religiosity; each third model added the potential moderator of student sex attitudes total score; and each fourth model added an interaction term between family religiosity and student sex attitudes. In order to avoid potentially high multicollinearity with the interaction term, student sex attitudes scores were centered and the interaction terms were created using this centered score. After controlling for relevant individual- and family-level characteristics, results suggest that students' own sex attitudes do not moderate the relationship between family religiosity and any of the sexual activity or sexual risk outcome variables (tables 21 & 22, p.218-230).

Results suggested that instead, student sex attitudes might act as a mediator rather than a moderator in the relationship between family religiosity and student sexual activity and sexual risk. Bivariate analyses (tables 15, 23 & 24, p.209 & 231-234) were used to test the assumptions of the mediation model. As previously reported, there were

significant differences in student sex attitudes total scores for infrequent (M = 77.02, SD = 11.723) and frequent (M = 70.79, SD = 14.326) family religiosity, $t(567) = 5.667$, $p < .001$). Students with more open sex attitudes were more likely to have had four or more lifetime partners (AOR = 1.047, 95% CI: 1.030, 1.065, $p < .001$), less likely to have delayed sexual activity to age 17 or older (AOR = 0.980, CI: 0.965, 0.996, $p = .012$), and more likely ever to have had oral sex (AOR = 1.071, 95% CI: 1.053, 1.090, $p < .001$), vaginal sex (AOR = 1.064, 95% CI: 1.047, 1.081, $p < .001$), and anal sex (AOR = 1.037, 95% CI: 1.020, 1.053, $p < .001$). Students with more open sex attitudes were also more likely to report substance use before their last vaginal sex (AOR = 1.036, 95% CI: 1.019, 1.054, $p < .001$), and more likely to report having received the HPV vaccine than not having received it (AOR = 1.04, 95% CI: 1.023, 1.057, $p < .001$). Four of these outcome variables, ever having had oral sex, ever having had vaginal sex, ever having had anal sex, and having received the HPV vaccine, also had a statistically significant relationship to the independent variable of family religiosity (tables 10 & 11, p.202-205). Subsequent tests for mediation were conducted on these four outcome variables.

Results of hierarchical logistic regression suggest that student sex attitudes do partially mediate the relationship between family religiosity and two of the four tested outcome variables, ever having had oral sex (AOR = 1.047, 95% CI: 1.024, 1.071, $p < .001$) and ever having had vaginal sex (AOR = 1.047, 95% CI: 1.025, 1.070, $p < .001$) (Tables 25-28). The Sobel test confirmed partial mediation for both outcomes, ever having had oral sex and ever having had vaginal sex ($Z = -3.37$, $p < .001$).

In addition, race remained a significant predictor from the bivariate to the multivariate levels, with Asian students significantly less likely than White students ever

to have had oral sex (AOR = 0.345, 95% CI: 0.123, 0.968, *p* = .043) and ever to have had

vaginal sex (AOR = 0.341, 95% CI: 0.131, 0.891, *p* = .028). Students who lived in a

single-parent household during high school remained significantly more likely than

students from other household compositions ever to have had vaginal sex (AOR = 2.249,

95% CI: 1.040, 4.864, *p* = .040). In addition, males remained significantly less likely than

females to report having received the HPV vaccine vs. not having received it (AOR

= .326, 95% CI: 0.187, 0.589, *p* < .001).

To test for moderation by student religiosity, separate hierarchical logistic

regressions were conducted for each sexual activity and sexual risk outcome variable

with each of five possible student religiosity domains (overall self-ranking, private

practice, forgiveness, organizational religiousness, and total student religiosity score),

using the same process for moderation with centered variables that is described above for

testing moderation by student sex attitudes. Results from these 65 regressions (tables not

shown) indicate that none of the five domains of student religiosity either moderate or

mediate the relationship between family religiosity and student sexual activity or sexual

risk. Given the strong positive association between more frequent family religiosity and

higher scores on student religiosity, the lack of moderation by student religiosity is

unsurprising.

In order to better understand the lack of hypothesized moderation, student

religiosity was subsequently explored as an independent predictor of students' sexual

activity and sexual risk. After controlling for relevant individual-level and family-level

characteristics, higher students' total religiosity score was significantly associated with

less likelihood of having had four or more sexual partners (AOR = 0.985, 95% CI: 0.970,

1.000, $p = .049$), ever having had oral sex (AOR = 0.972, 95% CI: 0.952, 0.993, $p = .008$), ever having had vaginal sex (AOR = 0.973, 95% CI: 0.953, 0.993, $p = .009$), and ever having had anal sex (AOR = 0.979, 95% CI: 0.960, 0.998, $p = .034$). In addition, students with a higher religiosity score were more likely to have used a condom at last vaginal sex (AOR = 1.017, 95% CI: 1.001, 1.034, $p = .039$).

Hypotheses 1.7 – 1.8 stated that parental monitoring would mediate the relationships between family religiosity and college students' sexual activity and sexual risk. Bivariate analyses (Tables 11-14, p.203-208) were used to test the assumptions of the mediation model. Only one outcome variable, ever having had unprotected vaginal sex, had a statistically significant relationship with both the independent variable of family religiosity ($X^2 = 4.490$, $p < .05$, Table 11.5) and with the potential mediator of parental monitoring score (AOR = 0.921, 95% CI: 0.874, 0.971, $p = .002$, Table 14.5); subsequent tests for mediation using hierarchical logistic regression were conducted on this outcome variable (Table 29, p.240). After controlling for relevant individual-level characteristics, results suggest that as hypothesized, parental monitoring partially mediates the relationship between family religiosity and whether or not a student has ever had unprotected vaginal sex (AOR = 0.921, 95% CI: 0.870, 0.975, $p = .004$). The Sobel test confirmed partial mediation (Z= -2.37, $p = .018$).

**Research Question 2**

The second research question examined the relationships between family communication about sex during adolescence, college students' attitudes about sex, and college students' sexual activity, including risk and protective behaviors. Hypotheses 2.1 – 2.3 stated that students' attitudes about sex would mediate the relationships between

family sex communication and students' sexual activity and sexual risk. Bivariate

analyses (Tables 16-20, p.210-217) were used to test the assumptions of the mediation

model. Two outcome variables, ever having had vaginal sex (AOR = 1.072, 95% CI:

0.997, 1.154, $p$ = .062) and having received the HPV vaccine (AOR = 0.786, 95% CI:

0.710, 0.870, $p$ < .001) were statistically significantly related both to the independent

variable of family sex communication and to the potential mediator of communion score

(AOR = 1.054, 95% CI 1.009, 1.100, $p$ = .017 and AOR = 0.931, 95% CI 0.881, 0.983, $p$

= .011, respectively). Subsequent tests of mediation were conducted on these two

outcome variables using only the communion attitudes subscale score as a potential

mediator.

Tables 30 & 31 (p.241-245) show the results of adjusted multivariable logistic

regression models; three models were fit for each of the two relevant outcome variables,

with each first model including only relevant covariates; each second model added the

independent variable of total family sex communication; and each third model added the

potential mediator of students' scores on the communion attitudes scale.  After

controlling for relevant individual- and family-level characteristics, results suggest that

the relationship between family sex communication and students ever having had vaginal

sex is not mediated by students' more idealistic attitudes about sex.

Though mediation was not present in this model, certain other predictors

remained significant from the bivariate to the multivariate analysis. First generation

college students remain almost twice as likely as non-first generation students ever to

have had vaginal sex (AOR = 1.937, 95% CI: 1.001, 3.749, $p$ = .05), while students who

lived in single parent households during high school were more than three times as likely

(AOR = 3.115, 95% CI: 1.496, 6.484, *p* = .002) as students from dual parent households ever to have had vaginal sex. Compared to non-religious students (those identifying as Atheist or Agnostic), Muslim students were significantly less likely ever to have had vaginal sex (AOR = 0.242, 95% CI: 0.072, 0.808, *p* = .021).

For the categorical outcome of HPV vaccine compliance, results from Model 3 suggest that after controlling for relevant individual- and family-level characteristics, students' scores on the communion attitudes subscale appeared to mediate the relationship between family sex communication and whether or not students are sure or unsure of their HPV vaccine compliance status. With the addition to the model of students' report of a more idealistic view of sexuality as 'a merging of two souls' or 'the ultimate human interaction', the direct effect of family sex communication on awareness of HPV vaccine compliance decreased, consistent with partial mediation; however, the independent variable of family sex communication was no longer significant in the multivariate model. The Sobel test confirmed that the reduction in the effect of the independent variable was not significant (Sobel Z = 0.323, *p* = .747) and therefore that the mediation was not significant.

In addition, males remain significantly less likely than females to report having received the HPV vaccine (AOR = 0.415, 95% CI: 0.242, 0.713, *p* = .001). Non-Catholic Christian students (AOR = 0.329, 95% CI: 0.165, 0.658, *p* = .002) and Muslim students (AOR = 0.286, 95% CI: 0.100, 0.815, *p* = .019) were significantly less likely than non-religious students (those identifying as Atheist or Agnostic) to report having received the HPV vaccine.

**Research Question 3**

The study's third research question explored the possibility that a few underlying constructs may have driven students' responses to many individual survey items. To investigate the validity of this hypothesis, exploratory factor analyses (EFA) were conducted for the six hypothesized constructs (family religiosity, family openness about sex, student religiosity, students' openness about sex, students' willingness to engage in sexual activity, and students' willingness to take sexual risks).

*Family Religiosity & Family Openness About Sex.* An exploratory factor analysis using principal-axis factor extraction (PAF) with direct oblimin rotation was conducted on the five composite scores related to family influence, including the *FAITHS* frequency and importance scores, total family sex education and total family sex communication scores, and total parental monitoring score. Preliminary examination of the results included Bartlett's Test of Sphericity, the Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy (cut-off above 0.50), and the measures of sampling adequacy (MSA) as provided in the anti-correlation matrix (cut-off above 0.50) (Yong & Pearce, 2013). These results confirmed that patterned relationships do exist among the included variables (Bartlett's Test $X^2(6) = 793.594$, $p < .001$) and that the study's sample was suitable for conducting an EFA (KMO = 0.513; MSA > 0.50).

The scree plot and the Kaiser-Guttman rule were used to determine the number of factors to be extracted (only those factors with eigenvalues greater than or equal to one, because the purpose of a data reduction technique like PAF is to identify factors that account for at least as much variance as any of the original variables individually, which is one unit when the original variables are standardized) (Pett et al., 2003; Yong & Pearce,

2013). Both the scree plot and the Kaiser-Guttman rule indicated a two-factor solution. Direct oblimin rotation was used to interpret the two factors; this oblique rotation method was chosen because it allows for the possibility that the underlying factors for family religiosity and family openness about sex are correlated, which is consistent with the study's theoretical approach.

The two identified factors, which corresponded to the hypothesized constructs of 'family religiosity' and 'family openness about sex', explained a cumulative variance of 70.4%. Figure 5 shows the rotated factor solution; table 32 (p.246) shows the factor loadings after rotation, using a significant factor criterion of greater than 0.3. The *FAITHS* importance and *FAITHS* frequency scores loaded onto the higher order factor of 'Family Religiosity' and the family sex education and family sex communication total scores loaded onto the higher order factor of 'Family Openness About Sex'. One measured variable, the parental monitoring total score, was removed from the final analysis as it was not significant in the model.

*Student Religiosity & Student Openness About Sex.* An exploratory factor analysis using PAF with direct oblimin rotation was conducted on the eight composite scores related to student religiosity (scores for the Overall Self-Ranking, Forgiveness, Private Practice, and Organizational Religiousness domains) and student attitudes about sex (scores for the Permissiveness, Birth Control, Communion, and Instrumentality domains). Preliminary examination of the results confirmed that patterned relationships do exist among the included variables (Bartlett's Test $X^2(28) = 1746.29$, $p < .001$) and that the study's sample was suitable for conducting an EFA (KMO = 0.821; MSA > 0.75).

The scree plot and the Kaiser-Guttman rule both indicated a two-factor solution. Direct oblimin rotation was used to interpret the two factors; this oblique rotation method was chosen because it allows for the possibility that the underlying factors for student religiosity and student openness about sex are correlated, which is consistent with the study's theoretical approach.

The two identified factors, which corresponded to the hypothesized constructs of 'student religiosity' and 'student openness about sex', explained a cumulative variance of 51.38%. Figure 6 shows the rotated factor solution; table 33 (p.247) shows the factor loadings after rotation, using a significant factor criterion of greater than 0.3. Each factor consisted of at least one complex variable (with cross-loadings greater than or equal to 0.3 on more than one factor). One measured variable, the 'communion' subscale of student sexual attitudes, was removed from the final analysis as it was not significant in the model.

*Student Activity and Student Risk.* An exploratory factor analysis using the mean- and variance-adjusted weighted least squares (WLSMV) estimator with geomin oblique rotation was performed on the binary and categorical variables related to students' sexual activity and sexual risk behaviors. Unlike the analyses above, which were conducted using SPSS v24, the following analysis was conducted using Mplus v8. The factor analysis procedure in SPSS ignores the measurement scale of individual variables, treating all variables as if they were on an interval scale and using a linear factor model; since all of the variables for sexual activity and sexual risk behaviors are either binary or categorical, it was necessary to choose a software program that treats the items as categorical and uses a non-linear (probit/logit) factor model.

Initial analysis returned possible 1-, 2-, 3-, and 4-factor solutions; table 34 (p.248) presents the model fit indices for each of these possible factor solutions. The 2-, 3-, and 4-factor solutions all demonstrate acceptable to good model fit according to the RMSEA and CFI values. However, three of the measured variables, 'multiple partners', 'substance use before last sex', and 'HPV vaccine compliance', did not load significantly onto any of the factors in either the 3- or 4-factor solution, suggesting that these variables do not belong in the model and may be their own constructs. An examination of the correlation matrix revealed that 'multiple partners' and 'substance use before last sex' are significantly positively correlated with one another ($r = .146$, $p = .001$), while 'HPV vaccine compliance' is significantly correlated with 'ever having had vaginal sex' ($r = .085$, $p = .036$); because these three items are not sufficiently correlated ($r < .30$) with one another or with any of the other outcome variables, they do not share much common variance, which can result in too many factors being extracted (Pett et al., 2003).

A subsequent EFA was conducted after removing the above mentioned three non-significant variables; this analysis returned possible 1- or 2-factor solutions (model fit indices presented in table 35, p.248). The 1-factor solution demonstrated poor model fit on every index and was rejected. The chi-square value for the overall model fit of the 2-factor solution was significant, $X^2$ (19) = 37.998, $p = 0.0059$, suggesting potentially poor model fit between the hypothesized model and the data. However, the sensitivity of $X^2$ in large samples prompted the assessment of other fit indices (Kline, 2016). Examination of these indices showed acceptable model fit with CFI = 0.99 and RMSEA = 0.04, 90% CI [0.021, 0.059]. Individual survey items loaded on the factors as hypothesized; rotated factor loadings are shown in table 36 (p.248). Oblique rotation allowed the two factors to

correlate, but the subsequent correlation ($r = .194$) was non-significant, suggesting that the two factors, described as students' willingness to participate in sexual activity and students' willingness to take sexual risks, are independent of one another.
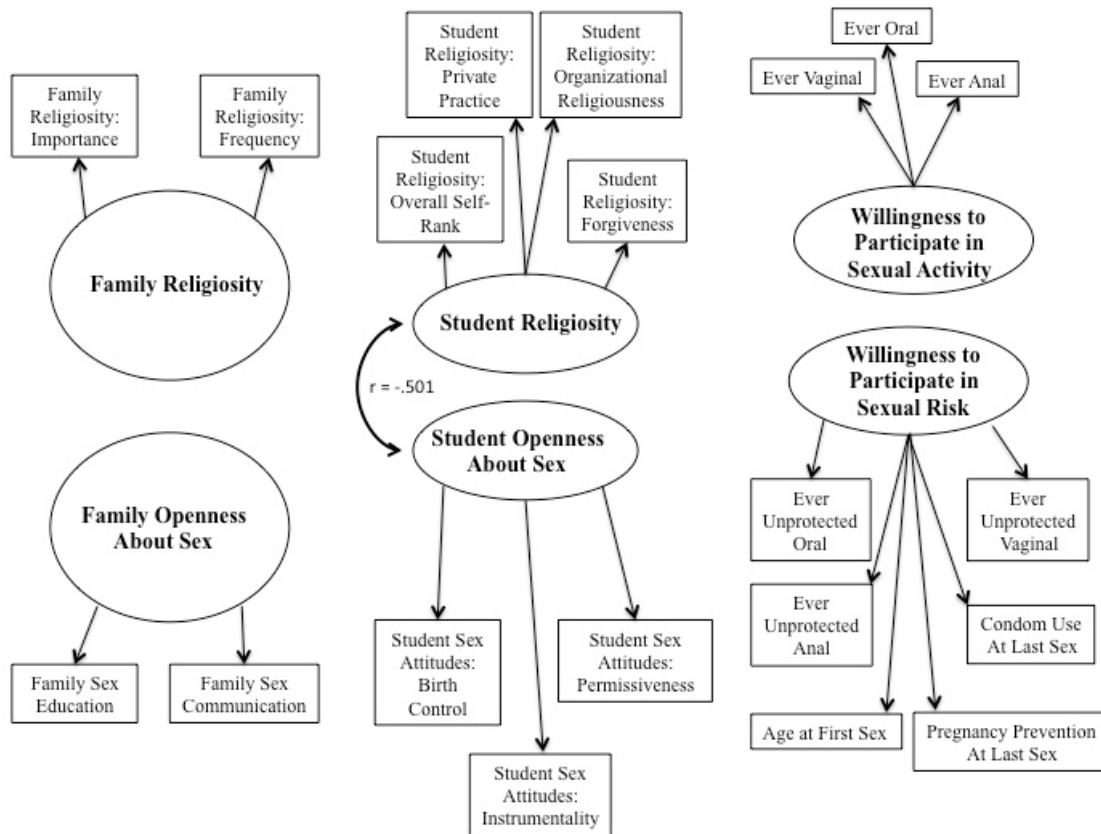


Figure 4: Revised Factor Model for Research Question 3.

**Chapter V: Discussion**

This chapter summarizes the major findings of this study and places them in the context of existing literature on family- and individual-level influences on college students' sexual activity and sexual risk and protective behaviors. Notable findings are explored in greater detail and implications for policy and programmatic intervention are suggested. Limitations of the current study are examined, and directions for future research are proposed.

The goal of this study was to improve our understanding of the relationships between multiple dimensions of family influence (religiosity, family sex communication, and parental monitoring) and college students' own sexual beliefs and behaviors, while shedding new light onto what college students are actually thinking and doing when it comes to sexual activity and sexual risk. This study also addresses several gaps in the current literature on these topics. First, existing research has rarely measured family religion as a multi-dimensional construct, and never in conjunction with family sex communication as an independent, co-occurring variable. Second, this study considers both family-level and individual-level influences on students' religiosity and attitudes about sex, acknowledging the potential role that family influence may play in students' beliefs and behaviors. Third, this study examines specific, measurable sexual activity and sexual risk behaviors, differentiating between participation and active risk-taking. And finally, this study enhances the literature on social learning theory by demonstrating the theory's application to the developmental stage of emerging adulthood and suggesting that Bandura's original understanding of human behavior as a product of observational

learning might be expanded to include changing influences on behavior across the life course.

**Summary of Key Findings**

The first aim of this study was to determine whether the degree of family religiosity (never/infrequent vs. frequent) during childhood and adolescence was associated with college students' sexual activity or sexual risk and protective behaviors, and whether or not parental monitoring during adolescence, students' current sexual attitudes, or students' current religiosity acted either as mediators of or moderators to that association. Overall, students reported low frequency of family religiosity during their childhood and adolescence. Results suggest that a higher degree of family religiosity was significantly associated with reduced likelihood of students' ever having had oral sex, ever having had vaginal sex, or ever having had unprotected vaginal sex (among students who reported having had vaginal sex), even after controlling for relevant individual- and family-level covariates. For students who had more open attitudes about sex, the relationship between higher family religiosity and being less likely ever to have had oral or vaginal sex was reduced, suggesting that a transmission of beliefs occurs from parents to students and it is through these 'transmitted' attitudes that family religiosity is related to college students' sexual behavior. This transmission is a direct reflection of the active exchange between role models and observers described by social learning theory's first key construct of observational or vicarious learning. Meanwhile, parental monitoring during adolescence partially mediated the relationship between family religiosity and one sexual risk outcome, ever having had unprotected vaginal sex, suggesting that a greater

degree of parental monitoring is an avenue through which family religiosity exerts influence upon college students' choices to use protection during vaginal sex.

The study's second aim was to determine whether family communication about sex during adolescence was associated with college students' sexual activity or sexual risk and protective behaviors, and whether or not students' current sexual attitudes mediated that association. Results suggest that after controlling for relevant individual- and family-level covariates, more comprehensive family communication about sex is significantly associated with increased likelihood of students having had more sexual partners. Students with more comprehensive family communication about sex were also less likely to be unsure about their HPV vaccine status, and this association was partially mediated by students' own attitudes about sex as a 'merging of two souls' or the 'ultimate human interaction'. Students' current sex attitudes did not mediate the relationship between family communication about sex and any other student sexual behaviors.

The third aim of the study was to investigate the possibility that underlying factors related to the study's hypothesized constructs drove students' responses to certain items on the survey. Results suggest that the six hypothesized factors (family religiosity, family openness about sex, student religiosity, student openness about sex, student willingness to participate in sexual activity, and students' lack of concern for or perceived immunity from risk) do exist, though some variables did not load as strongly (or at all) on the hypothesized relevant factor.

Finally, certain covariates also demonstrated significant associations with the dependent variables. Under the study's first research question, students' race was

significantly associated with every having had oral sex or vaginal sex; living in a single-parent household during high school was also significantly associated with ever having had vaginal sex; and gender was significantly related to HPV vaccine compliance. Under the study's second research question, being a first-generation college student and coming from a single-parent household during high school were both significantly associated with ever having had vaginal sex; and students' religious affiliation was significantly associated with ever having had vaginal sex and with HPV vaccine compliance.

**Family Religiosity and Student Outcomes**

The study's first hypothesis proposed that higher family religiosity would be associated with lower sexual activity in college students, meaning older age at first sex, lower number of lifetime partners, and less likelihood of participation in oral, vaginal, or anal sex. This hypothesis was partially supported – family religiosity was not significantly associated either with delayed sexual onset or with a lower number of lifetime partners, but it was significantly associated with less likelihood of ever having had oral or vaginal sex. Given the expectation that highly religious families are likely to focus sex communication on abstinence from sexual activity, a possible explanation for this finding might have been that highly religious families in this sample simply weren't talking about sex at all, or at least not enough for students to have internalized messages about delaying sexual onset or saving themselves for one partner in marriage. However, the data confirm that there is a significant difference in family sex communication between students who reported infrequent vs. frequent family religiosity, with students who reported frequent family religiosity also reporting more comprehensive family sex

communication. If highly religious families are actually spending more time communicating about sex, then another explanation for this finding is needed.

It is important to note that greater family religiosity was associated with a decreased likelihood of engaging in certain sex acts, but for students who did choose to engage, family religiosity was not associated with any differences in the timing of sexual onset or in the number of partners with whom students' engaged. This finding implies that family religiosity may influence some students' decisions whether or not to have sex; but for students who do choose to have sex, the break from religious teachings about sex may already have occurred, so family religiosity no longer had a role to play in decisions like when to begin having sex, or whether or not to have sex with more than one partner. It is also possible that students who internalized religious messages about refraining from sexual activity might be more likely to characterize their families as being highly religious than would students for whom those religious messages were less salient.

The first hypothesis also proposed that higher family religiosity would be associated with higher sexual risk in college students, meaning lack of condom use or pregnancy prevention at last sex, greater likelihood of substance use before last sex, and lack of HPV vaccine compliance. Again, the hypothesis was partially supported – family religiosity was not significantly associated with substance use at last sex, condom use at last sex, or pregnancy prevention at last sex, but it was significantly associated with less likelihood of having received the HPV vaccine. The lack of a significant association for many of these risk outcomes seems to confirm the above findings – family religiosity is only related to college students' choices about whether or not to abstain from sexual

activity completely. Once students become sexually active, family religiosity is not associated with most subsequent choices related to sexual behavior.

The significant association between family religiosity and a lower likelihood of having received the HPV vaccine expands upon existing research which suggests that religious denomination and religious service attendance may pose a vaccination barrier for highly religious parents (Shelton et al., 2013; Thomas et al., 2012). In the current study, denomination and service attendance are individual aspects of the larger measured construct of family religiosity; so in this sample, simply having a more actively religious family (read: parents) may pose the barrier to vaccination. There is some concern among various religious groups that the HPV vaccine may promote sexual promiscuity or at least a false sense of protection against sexually transmitted infections (Bodson, Wilson, Warner, & Kepka, 2017; Constantine & Jerman, 2007; Galbraith et al., 2016), which may result in parents choosing not to vaccinate their children for fear of sending a message about sex that contradicts previous religiously-motivated conversations.

Another possible explanation for this finding may be that more religious parents are simply less well-informed about the need for and benefits of the HPV vaccine. Numerous studies have shown that accurate knowledge levels about both HPV and the vaccine are low overall (eg. Fontenot, Domush, & Zimet, 2015; Morales-Campos, Markham, Peskin, & Fernandez, 2013; Underwood et al., 2016); awareness is particularly low among religious or ethnic minority groups (Bodson et al., 2017; Galbraith et al., 2016) for whom health messaging and even health services are often provided by the faith community.

Family religiosity was also significantly associated with ever having had unprotected vaginal sex (among those students who reported having had vaginal sex), but not in the hypothesized direction. Contrary to expectation, higher family religiosity was associated with a decreased likelihood of this particular sexual risk behavior, rather than an increased likelihood of risk. This finding seems directly related to the previous finding that family religiosity was associated with a decreased likelihood of engaging in certain sex acts, but for students who did choose to engage, was not associated with any differences in the timing of sexual onset or in the number of partners with whom students' engaged. Within the context of this previous finding, it makes sense that if students have chosen to ignore or rebel against family religious teachings about sexual activity, they would be more likely to take extra precautions so as not to be found out by their parents or other family members. One study of adolescents active in their church community found that participants' parents had regularly reinforced the idea that going against biblical principles related to sexual activity would increase the likelihood of negative consequences that could derail future goals and opportunities (Moore, Berkley-Patton, Bohn, Hawes, & Bowe-Thompson, 2014). Fear that a negative consequence like unplanned pregnancy may lead to parental disappointment or shame may drive students to protect themselves from risk by avoiding unprotected vaginal sex. In this situation, using protection during vaginal sex may be less a result of internalized messages about pregnancy and disease but more simply a mechanism for maintaining the secrecy of sexual activity.

Hypotheses 1.2 and 1.3, that higher family religiosity would be associated with higher student religiosity and less open attitudes about sex, were both supported.

However, Hypothesis 1.4, which proposed that higher levels of student religiosity would increase the association of family religiosity and students' sexual behaviors, was not supported. None of the four domains of student religiosity (overall self-ranking, private practice, forgiveness, or organizational religiosity) nor the total religiosity score served to moderate (or mediate) the relationship between family religiosity and students' sexual activity or sexual risk behaviors. The expected finding that higher family religiosity is associated with higher student religiosity makes sense; growing up in an environment that values religious participation and religious teachings is likely to instill an appreciation for, or sense of obligation to, those religious traditions. However, the lack of moderation by students' current religiosity on the relationship between family religiosity and students' sexual behaviors also makes sense. Having a high degree of personal religiosity is independently associated with certain student sexual behaviors, but that association does not change the original relationship between family religiosity and students' behaviors; whether or not a student has internalized religious messages remains separate from the potential internalizing of other standards of behavior or sexual expectations.

Hypotheses 1.5 and 1.6, that college students' less open attitudes about sex would strengthen the association between family religiosity and student sexual activity and weaken the relationship between family religiosity and student sexual risk, were not supported. None of the four domains of student sex attitudes (permissiveness, birth control, communion, or instrumentality), or the total attitudes score, acted as a moderator in these relationships. However, a different significant relationship that was not theorized a priori did emerge. College students' total attitudes score acted as a mediator in the relationship between family religiosity and two sexual activity outcomes, ever having had

oral sex and ever having had vaginal sex; so in highly religious families, student attitudes about sex are the mechanism through which family religiosity is associated with students' sexual behaviors.

Though not originally hypothesized, this finding makes sense – family beliefs shape students' beliefs, which then shape students' behaviors. Rather than acting as an independent moderator on the relationship between family religiosity and student sexual behavior, students' attitudes about sex belong on the pathway of that relationship. Rather than family religiosity exerting influence on student behaviors in the form of a parent's voice in a student's head or memories of a family's religious teachings, it seems likely that a more thorough transmission of beliefs occurs in highly religious families, so that students now view those beliefs as their own, rather than as a holdover from parental influence in childhood.

The final hypotheses of the study's first research question proposed that higher family religiosity would be associated with higher levels of parental monitoring (1.7) and that higher parental monitoring would then be associated with lower sexual activity and higher sexual risk (1.8). Higher family religiosity was significantly associated with a higher degree of parental monitoring, but parental monitoring only acted as a mediator in the relationship between family religiosity and one sexual risk outcome variable, ever having had unprotected vaginal sex. Students in more religious families report a higher degree of parental monitoring, and also a significantly lower likelihood of ever having had unprotected vaginal sex (among students who have had vaginal sex). This finding also seems to support earlier findings in this study and the possibility that fear of parents

finding out about sexual activity may be a strong motivator for students from highly religious families to avoid sexual risk-taking.

If, in more religious families, parents are paying more attention to students' whereabouts and behaviors, and if at the same time the family's messaging around sex is religiously motivated and focused on abstinence or 'saving oneself for marriage', it is not only plausible but also highly likely that students' fear of negative consequences (like pregnancy or sexually transmitted infections) is leading them to avoid unprotected vaginal sex. An unplanned pregnancy, for example, is not likely to be easily concealed from parents' watching eyes; but some caution on the front end (ie. avoiding unprotected sex to begin with) may ensure that parents never learn the truth about students' sexual activity or behaviors.

It is also possible that the desire to maintain individual and family reputation within a close religious community acts as further motivation to avoid risk. Rational choice theory suggests that individuals' self-imposed sanctions on behavior are directly linked to the degree of their own religious commitment (Grasmick, Oklahoma, & Wilcox, 1990); while the theory is more often applied to an individual's decision to commit an illegal act, it is reasonable to extend the idea to participation in other taboo behaviors like premarital sex. Hill et. al (2014) suggest that an individual may be more likely to engage in a behavior like premarital sex if feelings of shame or embarrassment associated with that behavior were lower. In a highly religious family that is potentially part of a larger religious community, community stigma around premarital sex and the potential to bring community shame upon not only oneself but also one's family may further motivate

sexually active students to avoid unprotected vaginal sex that could result in an unintended pregnancy.

It is important to consider these findings related to family religiosity within the context of the study's guiding theoretical framework. Social learning theory posits that parents or families model attitudes and behaviors, and that the expectation of compliance with those modeled norms exists within a system of positive rewards or negative consequences. This study's findings related to a transmission of religious beliefs between parents and children confirms the theory's initial construct of vicarious learning, at least during childhood and early adolescence. However, the appearance of a break between family religious teachings during childhood and students' actual behaviors during college suggests that at some point in the transition from adolescence to emerging adulthood, the influence of parental modeling on child behavior may be trumped by some emerging adults' quests for agency and personal responsibility. Rather than contradicting the application of social learning theory to emerging adults, however, these findings further support the relevance of the theory's third construct, reciprocal determinism. Emerging adults, as theorized by Arnett and others, are not passive recipients of information; rather, their own desires, their social contexts, and their own behavior choices exert reciprocal influence on one another. In the ever-changing relational and sexual landscape of emerging adulthood, social learning theory offers a possible explanation for the seemingly random fluidity of emerging adults' choices and decision-making.

**Family Sex Communication and Student Outcomes**

The first hypothesis under research question two proposed that less comprehensive family sex communication would be associated with lower student sexual activity, meaning older age at first sex, lower number of lifetime partners, and less likelihood of ever having had oral, vaginal, or anal sex. This hypothesis was partially supported – more comprehensive family sex communication was associated with earlier age at first sex and with a higher number of lifetime sexual partners, but was not significantly related to participation in any specific sexual activities.

These findings must be interpreted with caution, particularly because the cross-sectional nature of these data prevent any assessment of causation – it is impossible to know whether or not family communication about sex took place before or after the student began having sex. A study of Midwestern high school students also found that more family-based sexual education, about both sexual intercourse and birth control, was related to more frequent sexual behavior (Somers & Gleason, 2001); the authors concur that the issue of timing is paramount in understanding these results.

It is possible that adolescents who are considering becoming sexually active, or who have recently become sexually active, may initiate communication with parents in order to acquire more information or simply for support during this transition. It is also possible that parents may notice changes in adolescents' attitudes or behaviors that suggest the adolescent may be growing more interested in sex, or may already be engaging in sexual activity, and may thus initiate more conversations about sexual topics with that child. One study found that parents who believed that their adolescent child had already been romantically involved with a partner were more likely to have discussed

more sexual topics (Eisenberg, Sieving, Bearinger, Swain, & Resnick, 2006), while results from another study indicate that parents often do not address sexual topics with adolescents until after the teen has become sexually active (Somers & Paulson, 2000).

This hypothesis also proposed that less comprehensive family sex communication would be associated with higher student sexual risk, meaning lack of condom use or pregnancy prevention at last sex, substance use before last sex, and lack of HPV vaccine compliance. Family sex communication was not significantly associated with ever having had unprotected oral, vaginal or anal sex, with condom use or pregnancy prevention at last vaginal sex, or with substance use before last sex. This lack of finding is somewhat surprising, especially considering that the scale used to assess family communication asks specific questions about communication related to birth control and disease prevention. However, in the context of the previous findings that family sex communication also was not associated with any specific sexual activities, and the likelihood that college students' also learned about birth control and disease prevention in school-based sex education classes, it is possible that family communication about sex simply is not the most salient source of information or influence on student sexual behaviors.

Family sex communication was significantly related to HPV vaccine compliance, with students who reported less comprehensive family sex communication being more likely to be unsure (vs. sure) of having received the HPV vaccine. This finding was expected – if overall family communication about sex is less comprehensive, then a free flow of information about protection against sexual risk probably does not exist. And if parents and students are engaging in less comprehensive communication about sex in general, it is unlikely that whatever communication they do have would involve a

discussion of the stigmatized 'sex vaccine'. Students who have not discussed specific risks associated with a sexually transmitted infection like HPV may be less aware of the vaccine as a protective agent, and therefore are probably less likely to have exerted their own agency in acquiring the vaccine or even in knowing the status of their own vaccine compliance.

Hypotheses 2.2 and 2.3 proposed that less comprehensive family sex communication would be associated with students having less open attitudes about sex, and those students who reported less open attitudes about sex would then have lower sexual activity and higher sexual risk. Neither of these hypotheses was supported, suggesting that family communication about sex may not be the primary source of influence on students' attitudes. So many avenues exist for acquiring information about sex, not only the tried and true source of adolescent information (peers!) but also schools, the Internet, and mainstream and social media outlets, that parental guidance may be less relevant now than for previous generations. A study of undergraduate students in the southeastern U.S. found that while sixty-seven percent of students believed that parents should be instrumental in sex education, only fifteen percent actually indicated their parents as a primary source (Rutledge, Siebert, Chonody, & Killian, 2011). A comprehensive report on the impact of exposure to sexual content on television highlighted the media as a primary basis for emerging adults' sexual knowledge, beliefs, attitudes, and understanding of sexual norms (Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005).

Another factor to consider when interpreting the lack of significant results under these hypotheses is the potential for disconnect between participants' self-described

attitudes and their actual attitudes and behaviors. In a qualitative study of fraternity men at a large midwestern university, Stinson, Levy, & Alt (2014) found that participants described themselves as 'gentlemen' who valued their partners while at the same time describing complete disregard for their female hookup partners needs or desires. It is possible that students might view their own attitudes about sex in a certain light when asked specific questions about specific attitudes or beliefs, but also acknowledge that their behaviors do not always correspond to those attitudes, perhaps in part because the sexual behaviors in question involve not only the students but also their unstudied partners who quite likely have sexual attitude of their own.

It is also possible that these results are simply a function of the scale used to assess family sex communication. The questions on this scale focus on information sharing, in particular specific topics of potential communication about sex (including use of birth control and disease prevention). Only one question on the scale addresses family *values* about sex, which arguably may be the more salient family-level influence on students' attitudes about sex. When the values-specific question was isolated from the larger family communication scale, significant differences were present in students' scores for three of the four sex attitudes domains; for each subscale, students who agreed that an adult in their life "thinks they should not be having sex as a teenager" had significantly lower, or less open, personal attitudes about sex.

Again, it is necessary to consider the study's theoretical framework when interpreting the findings related to family sex communication. Social learning theory's principle of differential reinforcement suggests that different social contexts may model different norms related to a particular behavior. In childhood and early adolescence,

family is likely to represent the most influential social context; however, as individuals transition from adolescents to emerging adults, their sphere of exposure and influence is likely to grow and change. Emerging adulthood as a developmental stage is characterized by impulsivity, identity formation, and fluidity of opinions and behaviors. As they actively continue to seek new experiences, emerging adults are also actively seeking new sources of information and influence. Their contexts for communication about sex may move from the home or the lunchroom to the dorm lounge or the local bar; and with the change in context surely comes a change in attitude or perspective.

**Latent Factors**

Exploratory factor analysis conducted under the study's third research question revealed that six underlying factors explain a proportion of the variance in the measured variables of interest for this study. As expected, variables related to family influence loaded onto two factors, 'family religiosity' and 'family openness about sex'. Somewhat surprisingly, however, degree of parental monitoring did not load significantly on either of these factors, suggesting that parental monitoring represents a separate construct. Upon reflection, this finding makes sense; though parental monitoring is significantly associated with both family religiosity and family communication about sex, these are only two of many potential areas of a student's life in which parents' monitoring activity may be involved. Because parental monitoring may address such diverse areas of adolescent life as academic performance, peer group selection and involvement, participation in family or household responsibilities, and risk reduction (not only sexual risk but also vehicle safety, substance use and abuse, and general health risks), it is likely

that a separate factor related to family influence might exist, perhaps 'parental vigilance', that explains the parental monitoring scores of students in this sample.

Seven of the eight composite scores for domains of student religiosity and domains of student sex attitudes loaded onto two factors, 'student religiosity' and 'student openness about sex', in the expected direction. One domain subscale score, the 'communion subscale', did not load significantly on either of these factors, and a second domain subscale score, the 'birth control' subscale, barely made the cutoff for a significant loading (.32). Considering the study's other findings related to student sex attitudes, in particular the fact that the communion subscale behaved differently from the other subscales under research question two, it is reasonable to infer that this subscale is measuring something substantively different than the other attitudes scales, which reflect students' more general degree of openness about sex.  For the birth control subscale, which measures the degree of personal responsibility the respondent feels in relation to birth control use, as well as the general degree to which birth control is considered a part of sexual responsibility, significant gender differences may be impacting this variable's factor loading - female students reported significantly higher mean scores.

An exploratory factor analysis was also conducted on twelve of the study's thirteen outcome variables; 'only having had oral sex' was omitted from this analysis because it depends upon students' responses to three of the other outcome variables and thus poses a likely problem of multicollinearity. Of these twelve variables, nine loaded significantly on one of two factors, 'willingness to participate in sexual activity' and 'willingness to take sexual risks'. Three variables (multiple partners, substance use before

last sex, and HPV vaccine compliance), failed to load significantly on either factor, suggesting that responses on these items may be related to a separate construct.

Though at first glance a question about having had multiple lifetime sexual partners seems to be directly related to a potential underlying factor of 'willingness to participate in sexual activity', further consideration of the actual survey items is necessary in order to understand why this variable did not load significantly onto either factor related to sexual behavior. A considerable amount of overlap exists between the 'multiple partners' variable and each of the other 'sexual activity' variables -- ninety-six percent of the sexually active students who were prompted to answer the question about their lifetime number of sexual partners have ever had oral sex; eighty-nine percent have ever had vaginal sex; and twenty-nine percent have ever had anal sex. The 'multiple partners' variable is not measuring anything unique or different from the previous variables, it is simply another representation of students' responses on those items.

It makes sense that students' report of substance use before last sex may be related to a separate factor than other sexual risk behaviors. Within the college environment, the prevalence of alcohol use is high and norms around drinking as a social requirement may lead students to view alcohol use through a different lens than other risk behaviors. According to the 2015 National Survey on Drug Use and Health (NSDUH), fifty-eight percent of full-time college students ages 18-22 drank alcohol in the past month, and nearly thirty-eight percent reported binge drinking (drinking five or more drinks for males or four or more drinks for females on the same occasion on at least one day in the past 30 days) in the past month. Nearly thirteen percent of college students reported heavy alcohol use in the past month, that is, binge drinking on the same occasion

on each of five or more days in the past 30 days (SAMHSA, 2016). The majority of students already have some experience with alcohol by the time they arrive at college, but student expectations, social pressures, lack of supervision by parents or other adults, and the widespread availability of alcohol together contribute to intensify college students' alcohol use (National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2015). Because alcohol use is seen as such an integral and normal part of college life, students may not perceive their own alcohol use to be a risk behavior, but rather see it as an element of their social life or social persona.

The lack of significant loading for HPV vaccine compliance on either sexual behavior outcome is likely also directly related to students' perceptions of risk. Children rarely know exactly what diseases they are being vaccinated against; instead, they have a general sense that vaccines protect their health (Haber, Malow, & Zimet, 2007). And for years, marketing campaigns around the HPV vaccine have focused on the vaccine as a cancer-prevention tool, rather than as an STI-prevention necessity, in order to ameliorate parents' spurious concerns that vaccination against HPV may encourage sexual activity. Some students are unsure of whether or not they have received the vaccine; even among students who know their vaccine status, it is possible that the students aren't entirely clear about the nature of HPV, either the disease itself or its possible modes of transmission. It makes sense that an underlying factor related to sexual risk behavior may not also be related to responses about HPV vaccine compliance, since students are likely to perceive being vaccinated as a general health behavior and not related to in-the-moment sexual risk.

The results of the above exploratory factor analysis provide a framework for understanding the underlying structure of the variables measured in this study, and suggest that both family and student beliefs and behaviors may be represented by broader hypothetical but unobservable constructs. Analyses under research questions one and two highlighted the relationships between specific measured variables; by focusing on a few key factors, rather than the larger set of measured variables, the analysis under research question three makes it easier to interpret the relationships among the study's key constructs of family and student religiosity, family and student openness about sex, and student participation in sexual activity and sexual risk; focusing on a few key factors also reduces the possibility of potentially trivial measured variables being given undue attention. The factor analysis revealed, for example, that family religiosity and family sex communication are in fact separate constructs that should be measured as such, rather than being conflated, as in some previous research, into a one-dimensional measure of family influence.  Similarly, students' own religiosity and students' attitudes about sex loaded onto separate factors, suggesting that for college students, personal religiosity and opinions or beliefs about sex, though related, do not reflect the same underlying construct. The fact that certain key measured variables (for example, parental monitoring), did not load onto one of the six primary factors is also important for interpretation because it suggests the strong likelihood that college students' beliefs and behaviors are influenced by more than just the constructs identified by this study.

**Additional Findings of Interest**

In addition to the abovementioned findings related to the study's primary independent and dependent variables, certain covariates also demonstrated significant

associations with the dependent variables during data analysis. For example, under the first research question, which explored relationships between family religiosity and students' sexual behavior, students' race remained significant in the final model, with Asian students significantly less likely than White students ever to have had oral sex or vaginal sex. This finding is consistent with existing literature on the relationships between race or ethnicity and sexual behaviors, though many studies on these topics neglect even to include Asian Americans (McLaughlin, Chen, Greenberger, & Biermeier, 1997). One study of emerging adults found that Asian Americans were consistently and significantly later than other racial groups (White, African American, or Latino) in initiating any of a list of sexual behaviors, including oral and anal sex (Feldman, Turner, & Araujo, 1999). Other studies have found that students of color, in general, are less likely to engage in hookup activities than Caucasian students (Owen, Rhoades, Stanley, & Fincham, 2010), and that Asian American young adults in particular are less sexually active in comparison to young adults from other ethnicities (Cochran, Mays, & Leung, 1991; Uecker, 2008).

A second important covariate under the study's first research question was household composition: students who lived in a single-parent household during high school remained significantly more likely than students from other household compositions ever to have had vaginal sex. This finding appears to be consistent with other studies that have found that women whose parents were married reported fewer hookups (Fielder, Walsh, Carey, & Carey, 2013) and that young women who came from two-parent households reported a lower number of sexual partners (Paat & Markham, 2016).

This finding also seems related to the relationship between parental monitoring and several sexual outcome variables in this sample; higher parental monitoring was significantly associated with a lower likelihood of having had four or more sexual partners, ever having had anal sex, and ever having had unprotected vaginal sex, and with a greater likelihood of having used a condom at last vaginal sex or of having taken steps to prevent pregnancy at last vaginal sex. Although parental monitoring was not specifically related to ever having had vaginal sex, it appears that overall in this sample, higher parental monitoring was associated with lower sexual activity; it stands to reason that students in single-parent households may be experiencing a lower degree of overall parental monitoring because that single parent has fewer hands and more responsibilities. In fact, students from single-parent households did have a lower mean parental monitoring score, but the difference was not statistically significant ($p = .082$).

Finally, gender was a statistically significant covariate in the final model for one sexual risk outcome variable, with females significantly more likely than males to report having received the HPV vaccine vs. not having received it and vs. being unsure about having received it. This finding is unsurprising given the history of the vaccine: the federal Advisory Committee on Immunization Practices (ACIP) recommended the vaccine for females in 2006, but did not add a recommendation for males until 2011 (CDC, 2016; Kaiser, 2015). Because receipt of the HPV vaccine has been a more common occurrence for a longer period of time for girls than it has been for boys, it makes sense that girls are just more likely to have received the vaccine, because physicians and parents are more conditioned to view the vaccine as necessary for young girls.  It is also possible that girls are more likely than boys to know their vaccine

compliance status because the cervical cancer risks associated with HPV infection have been widely discussed in mainstream media as well as in vaccine marketing campaigns, while uniquely male risks have not received the same attention.

Under the study's second research question, which examined relationships between family sex communication and various sexual behavior outcomes, certain covariates again played an important role in analysis. First generation college students remained almost twice as likely as non-first generation students ever to have had vaginal sex, while students who lived in single parent households during high school were more than three times as likely as students from non-single parent households ever to have had vaginal sex. As above, this finding seems directly related to the degree of parental monitoring that students experienced during high school – first generation college students reported lower parental monitoring scores than did non-first generation students, and the difference was statistically significant ($p = .009$). This finding may be the result of non-college educated parents working long hours, perhaps in shiftwork, or perhaps in more than one job.  Nearly sixty percent of the first generation college students in this sample also had at least one immigrant parent; again, while these parents are working to provide opportunities (like college) for their children, they may be unable to maintain as high a level of monitoring behavior.

Students' religious affiliation was also significantly associated with two sexual behavior outcomes. Compared to non-religious students (those identifying as Atheist or Agnostic), Muslim students were significantly less likely ever to have had vaginal sex, while non-Catholic Christian students and Muslim students were significantly less likely than non-religious students to report having received the HPV vaccine. These findings

are consistent with existing literature on differences in sexual attitudes and behaviors based on religious affiliation. One study in the UK found that Muslim women were less aware of HPV than were non-religious women (Marlow, Wardle, Forster, & Waller, 2009), while another found that Muslim women were less accepting of the vaccine (Marlow, Waller, Evans, & Wardle, 2009).

**Limitations**

This study had certain limitations that must be considered when interpreting the results.  Because participants were assessed at only one time point, causal inferences cannot be made using these cross-sectional data.  In particular, the study's use of participant recall to measure the degree of family communication about sex suffered from the lack of any timeline related to these questions.  It is impossible to know when in the course of a student's childhood or adolescence the family communication about sex occurred, and is therefore impossible to determine whether communication about sex took place prior to and/or following the student's sexual initiation.  Without this information, interpretation of the significant association between family sex communication and certain student sexual activities must be undertaken with caution.

A second limitation of the study relates to issues with two specific variables. The 'age at first sex' variable, a sexual activity outcome, comes from an item on the YRBS national survey of high school students. The YRBS data handbook recommends the creation of a variable for 'sex before age 13' as the best use of data from this survey item. However, in this study's sample, only six participants (of the 497 who reported having had any sex) reported having had sex before age 13. Based on the distribution of

responses on this item, a dichotomous 'age at first sex' variable was created with answer options '16 or younger' (n=215) or '17 or older' (n=282). Of the 215 participants who fall into the '16 or younger' category, seventy-seven percent (n=165) reported having been 15 or 16 years old at first sex; the overall lack of variation in responses to this survey item, and the relatively small number of participants who initiated sex at a young age, suggest that this variable may not provide meaningful insight into student sexual activity in this population.

Another item-specific limitation relates to one of the sexual risk outcome variables, 'condom use at last sex'. This variable was created based on participants' responses to the question 'The last time you had vaginal intercourse, what method (or methods) did you or your partner use to prevent pregnancy (select all that apply)'. Only those participants who reported having had vaginal intercourse were prompted to answer this survey item, which means that sexually active participants who have not had vaginal sex were never asked about condom use in other recent sexual activity. Other survey items capture whether or not a participant has *ever* had unprotected oral or anal sex, but it is impossible to know if that risk is recent or ongoing because of the broad nature of the question. Because of this limitation, the risk outcome being measured is 'condom use at last vaginal sex', rather than 'condom use at last sex', which does not provide the same scope of information about students' potential exposure to risk.

In addition to the abovementioned issues with two variables, certain other data is missing from the study that might have enhanced interpretation of the study's main findings. In the realm of students' sexual activity, data was collected on students' age at first sex and number of lifetime partners, but no information is known about the length of

a student's 'sexual life' – meaning, they may have initiated sex at one age but then not participated again in sexual activity for years to come. Understanding not only a student's experience of particular sexual acts but also the duration, or breadth, of their overall sexual experience, would inform our understanding of students' attitudes, behaviors, and exposure to risk.

Other missing data might also have clarified the study's findings. For example, the survey collected data on family communication about specific topics, but failed to ask about general family closeness; more detailed information about family dynamics overall might provide a clearer lens through which to understand findings related to family communication. If a student had described low overall closeness, then low family sex communication might be expected; but if a student reported a close parental relationship and still reported low family sex communication, other influences (parental discomfort, for example, or parents' lack of knowledge) might be at play. Relatedly, further demographic information about the students' family (for example, parents' age) might allow for an examination of a type of cohort effect, wherein students with younger parents might experience greater closeness and therefore greater communication than students with older parents who themselves never experienced that kind of parental bond.

A final limitation of this study is related to the fluid nature of sexual activity and sexual relationships during the developmental stages of late adolescence and emerging adulthood. An abundance of literature suggests that emerging adults develop intimate relationships and acquire new sexual experiences at a rapid pace (eg. Alexander, Jemmott, Teitelman, & D'Antonio, 2015; Meier & Allen, 2009; Tanner, Arnett, & Leis, 2008), often through casual hook-up encounters (Allison & Risman, 2014, 2017; Stinson et al.,

2014). Dating, love, and romantic exploration are different during emerging adulthood, with a focus on individual identity exploration as well as the potential for physical and emotional intimacy (Arnett, 2000). Given the rapid pace of change during this developmental stage, it is important to recognize that the data reported in this study only provide one snapshot of students' sexual attitudes and behaviors and do not account for the complexities inherent in emerging adult sexual encounters.

**Implications**

Findings from this study about college students' sexual activity and sexual risk behaviors expand current knowledge in the field by delving in greater detail than previous studies into the potential relationships between family-level influences and specific individual-level attitudes and behaviors. A large body of literature already exists that examines the family's relationship to health behaviors during early adolescence; this study's examination of college students and the clear evidence within that the influence of family-level variables does not fully explain college students' sexual behaviors suggest that late adolescents and emerging adults cannot be grouped with early adolescents when examining attitudes or behaviors. Rather, studies like this one shed light onto the unique experiences of late adolescent development and emerging adulthood, and suggest that healthy decision-making during this stage involves other factors that may not yet have been examined.

One clear implication from the descriptive findings of this study is that current sex education programming is not having the desired effect on adolescents – huge proportions of the sexually active students in this study population have engaged in one

or more identified sexual risk behaviors. Because this study does not provide information about all of a student's sources of information on sexual topics, it is impossible to isolate a particular setting or type of sex education that may have failed; rather, it is necessary to consider the possibility that any or all of the potential mediums for delivery of sex education messages are failing at some point along a student's pathway to sexual risk-taking.

The history of sex education in the United States is a long and storied one; debates over the effectiveness and appropriateness of various models of sex education have been ongoing for decades, not only at the federal level but also at the state and local levels. From pamphlets extolling the evils of masturbation and the importance of theology and nutrition, to alarmist STD programs targeting specifically the military, to school-based sex education, American society has run the gamut of possible approaches to addressing this important public health issue, with widely varied reactions (Cornblatt, 2009; Planned Parenthood, 2016). In the 1960s and 70s, sex education became a political issue, as religious groups began actively opposing the inclusion of sex education instruction in public schools, claiming that such education promoted promiscuity. In the 1980s, concerns over teen pregnancy and the AIDS and HIV pandemic injected new vigor into the sex education movement, and by the mid-1990s every state had passed mandates for AIDS education, though only some states tied it to an overall general sex education course. Religious conservatives nonetheless continued to push an abstinence-only education agenda, and with the 1996 Welfare Reform Act, the federal government (for the first time) directed significant funds towards abstinence-focused education (Cornblatt, 2009). In 2010, the Obama administration changed course, announcing

funding for comprehensive teen pregnancy prevention programs. In 2017, the Trump administration eliminated funding for the same teen pregnancy prevention programs, informing researchers and program administrators that grant money they had been promised for fiscal years 2015 – 2019 would cease in June 2018. Opinions and emotions continue to run high on this issue, as individuals, families and legislators battle the clash of personal morality and public responsibility.

A long-standing controversy in the field of sex education relates to responsibility, namely, should schools or families be the primary source of information about sex? Some researchers suggest that adolescents need a combination of sexual socialization, through which families teach children about values and expectations for behavior via implicit and explicit messaging, and intentional, structured, knowledge-based education (Shtarkshall, Santelli, & Hirsch, 2007). However, other studies show that while parents of adolescents believe it is important to talk to their children about sex, many had not actually done so (Wilson, Dalberth, Koo, & Gard, 2010) or considered that they had communicated more effectively than they actually had (Hyde et al., 2013). Evidence exists that some formal sex education curricula can be effective in reducing adolescent sexual risk behavior (Kirby, 2007), but questions remain about how or why this risk reduction is not more widespread. Given this disconnect in the literature, and the current study's findings that family communication about sex and family religiosity may be important influences on students' sexual behavior but are clearly not the only influences at play, continued focus is needed on sex education and adolescent sexual risk prevention as a public health priority.

Evidence that a focus on emerging adults' sexual health and well-being is necessary can be found not only in this study but also in the national statistics on sexually transmitted infections among young people ages 15-24 (CDC, 2017b). The numbers of reported cases are both high and continually increasing; given that many cases of STIs go undiagnosed and untreated, we know that the negative consequences of sexual risk will continue to represent a major public health issue for emerging adults in the years to come.

Improved sex education programming might take one of a number of forms, depending on the context. Early 'sex' education efforts should (and sometimes, already do) begin at home and at school long before formal biology lessons on the anatomy of our reproductive systems. Conversations about having control over one's own body and what happens to it can be appropriate even for very young children, and may begin a healthy, open dialogue between parents and children about personal safety and about asking for help when necessary. If families establish themselves early in a child's life as a safe source of both information and conversation, children may feel more comfortable continuing those conversations as they transition to adolescence and early adulthood. Parents must choose to play an active role in their children's sex education, rather than continuing to pass responsibility to schools, churches, or other third party providers.

It is admittedly unrealistic to assume that parents can or should shoulder the entire burden of providing sex education; rather, families should simply be the first in a series of providers of accurate, honest information. School-based sex education programs should also begin long before biology class, at which point middle school students have already had the opportunity to absorb a large body of potential misinformation in their peer-based, social interactions. Schools play a major role in socializing children to the

norms of their society; from preschool, those norms should include verbal and physical respect for one another's words and bodies, so that messages about 'how to say no' need no longer be stressed so strongly to girls and so negligibly to boys.

It is also important for sex education efforts to continue into college; institutions of higher learning must be proactive in both education and prevention efforts. From new student orientation through peer education and campus outreach efforts, students' sexual health and well-being should be a visible priority for university administrations. Rather than assuming that students arrive at college already armed with the necessary tools and information to reduce their own risk exposure, universities must do better at addressing the students' clear and evident need for ongoing sex education. It is clear from this study and other research that an individual's 'social learning' does not stop during childhood or early adolescence, but that instead, the avenues for acquiring information simply adapt to new environments. College life, which is characterized by exposure to new sensations and experiences, clearly presents the potential not only for increased risk exposure but also for increased intervention and prevention work.

**Directions for Future Research**

Future research could build upon the current study in a few different ways in order to further expand our understanding of family- and individual-level influences on college students' sexual behavior. First, the collection of longitudinal data would allow researchers to establish causal links between family or early life influences and individual sexual behaviors later in adolescence, and might therefore inform the content of future sex education and family communication programming.

Research on this topic would also be enhanced by the inclusion of information regarding students' sexual knowledge – not only the accuracy of current knowledge about risks and behaviors, but also the sources of that information. Knowing whether sex education took place primarily in the home or school setting, and having more details about the content of that sex education, would expand researchers' ability to interpret pathways of influence from childhood through adolescence and emerging adulthood. More data about students' specific sexual behaviors should also be included; for example, including a specific item or items related to uncommitted or non-romantic sex would provide further insight into the hookup culture that is so prevalent on college campuses and might illuminate risk or protective behaviors that were not captured in the current study. As was mentioned above as a limitation, further information is also needed about students' condom use during all sexual encounters, not just vaginal sex. An expanded survey that offered more room to explore these variables would enable researchers to envision a more complete conceptual model of the varied influences on college students' sexual behavior.

The data presented in this study, in particular the descriptive data concerning students' sexual behaviors, strongly suggest that current sex education efforts, whether they take place in the home or at school or at church or in some other unknown setting, are failing to impart effective messaging around the topic of sexual risk, specifically the need for protection against STIs. Further investigation into the content of current programming as well as process evaluations related to the delivery and execution of that program content are needed in order for researchers to understand when, where, and how the failure occurs. This information will play a key role in the creation of better, more

effective risk prevention in sex education, and has the potential to substantially impact future adolescent sexual health behaviors.

The identification of six underlying factors in the study's third research question suggested a new model for the relationships among the study's key constructs. Future research with these data should test the factorial validity of this model with confirmatory factor analysis (CFA) to ensure that each of the identified factors relates to the others in the hypothesized ways; if the CFA confirms the validity of the EFA's results with adequate model fit, then a full structural equation model should be constructed to explore the interrelationship between family religiosity and family openness about sex, and the ways in which that interrelationship impacts students' sexual attitudes and behaviors differently from the impact of the individual measured variables.

Finally, a large body of qualitative data was collected as part of this study via open-ended text response survey questions. Though the scope of this project did not allow for complete analysis of these qualitative data, preliminary reading and coding suggest rich data that might greatly enhance interpretation of this study's findings and provide necessary insight into students' beliefs and attitudes about sex. To analyze these data, I will begin the process of constructing grounded theory through open coding and concept creation, creating categories from the open codes, linking these codes throughout the data (known as axial coding) and creating a theory to tell the story that is found in the data  (known as selective coding) (Daly, 2007).  I will read through all of the data several times, coding electronically with 'Dedoose', a cross-platform app for analyzing qualitative and mixed methods research. When open coding is complete, I will create a comprehensive list of codes, eliminating codes that are only relevant to one particular

observation or quote, and joining some different codes that seemed to address the same concept. I will make every effort to ensure credibility and data quality, by cross-checking the data (quantitative and qualitative) as well as my interpretations of the data to ensure a more complete understanding of the observed phenomena.  To improve data reliability and to minimize the potential for my own biases to influence either my coding process or my interpretations, I will have a second coder analyze the data, and then compare codes and interpretations.

**Conclusion**

This purpose of this research was to expand current knowledge and understanding of the relationships between family-level and individual-level influences on college students' sexual activity and sexual risk behavior. In addition, this study attempted to highlight the complex nature of religiosity and its long arm of influence. Findings suggest that family religiosity, family sex communication, student religiosity, student sex attitudes, student sexual activity and student sexual risk all are multi-dimensional constructs in need of further nuanced research. Both family-level and student-level variables were proven to be associated with aspects of student sexual behavior; among the most impactful findings are the rich descriptive data that illuminate the degree to which college students' continue to take sexual risks. This research underscores the need for innovation in sex education curriculum and programming, and the importance of ongoing research and programmatic intervention, in order to reduce sexual risk among emerging adults.

**Appendix A: Pre-notice Email for UMD Student Groups**

Greetings,

My name is Deirdre Quinn and I am a doctoral candidate in the Department of Family Science here at UMD.  I'm conducting research on the relationships between religion, family, and the college experience, and I need your help!

Later in the semester, I will be sharing a link to a brief, anonymous, online survey about these topics, and hope that as many undergraduate students as possible can complete the survey. I would really appreciate it if you would share the survey link with the members of your student organization or club, and encourage them to complete the survey to share their experiences of integrating religion into their lives.

If you are unwilling to share the survey with your members, please reply to this email and let me know so that I can be sure to remove your contact information from my list.

If you have any questions or would like to learn more about my project, please feel free to email me at: daquinn@umd.edu.

I really appreciate your time and help!

Sincerely,

Deirdre

**Appendix B: Email for FMSC Faculty & Graduate Students & Recruitment Flyer**

Hi X,

I hope your semester is off to a great start!  As you may know, I completed my dissertation proposal this month. I'm collecting my own data, surveying undergraduate students here at UMD about their experiences related to family religion, family communication about sex, and their own religious practices and sexual behaviors.

At the end of this email, I have included a link to a brief, anonymous, online survey about these topics, and also a flyer for the survey.  I'm hoping that as many undergraduate students as possible will complete the survey as soon as possible!

I know that it can be difficult to catch the students' attention, even for a brief survey, so I'm hoping that you can help me promote the study by announcing it to the students in your classes, or by emailing them the flyer and link through ELMS. Some participation incentives (in the form of a raffle for e-gift cards) are already in place. I'm hoping that you will consider encouraging your students to take the survey and perhaps offering an alternative incentive for completion of the survey in the form of some kind of course credit – maybe as a class participation credit, or as prelude to an in-class or online discussion activity.

If you are willing to share the survey with the students in your class, for extra credit or otherwise, please reply to this email and let me know!

If you have any questions or would like to learn more about my project, please feel free to email me at: daquinn@umd.edu. (This project has been approved by the UMCP IRB).

I really appreciate your time and help!

Sincerely,

Deirdre

# Let's Talk About Sex!

**Are you having sex? Are you NOT having sex?**
**What do you think about sex?**
**What do your parents say?**

Take a 📷 so you don't forget!

We want to hear from **YOU**
about **YOUR** experiences and **YOUR** beliefs.

Complete a brief online survey: **The firt 50 p eople** to respond
will receive a **$15** e-gift card to Starbucks, iTunes, or Amazon, and
everyone has a chance to win a **$100** e-gift card!!

http://go.umd.edu/SexTalkandCollegeLifeSurvey

**Participants MUST be undergraduate students at UMD**

Contact Deirdre Quinn at daquinn@umd.edu for more information

## Appendix D: Survey Description and Informed Consent

This survey was designed for undergraduate students at the University of Maryland.
*If you are not an undergraduate student at UMD, please do not take this survey.*

The survey is about health behavior, family life, and the college experience.
The information you give will be used to increase knowledge about the actual lives of
college students.
We appreciate your honesty and openness in answering each question.

All responses are CONFIDENTIAL.
This survey is anonymous and will not contain any information that may personally
identify you.

Your participation in this survey is voluntary. You may stop the survey at any time and
your responses will not be recorded.

Please make sure to read every question carefully, and select the best response.

Thank you very much for your help!

**Appendix E: Survey Measures**

**1 - Student Religiosity**

*Private Religious Practices*
How often do you pray privately in places other than at a religious service?
      1 - More than once a day
      2 - Once a day
      3 - A few times a week
      4 - Once a week
      5 - A few times a month
      6 - Once a month
      7 - Less than once a month
      8 - Never

Within your religious or spiritual tradition, how often do you meditate?
      1 - More than once a day
      2 - Once a day
      3 - A few times a week
      4 - Once a week
      5 - A few times a month
      6 - Once a month
      7- Less than once a month
      8 – Never

How often do you watch or listen to religious programs on TV or radio?
      1 - More than once a day
      2 - Once a day
      3 - A few times a week
      4 - Once a week
      5 - A few times a month
      6 - Once a month
      7- Less than once a month
      8 - Never

How often do you read sacred religious texts (e.g. the Bible, Torah, Talmud, Koran, etc)
or other religious literature?
      1 - More than once a day
      2 - Once a day
      3 - A few times a week
      4 - Once a week
      5 - A few times a month
      6 - Once a month
      7- Less than once a month
      8 - Never

How often are prayers or grace said before or after meals in your home?
>    1 - At all meals
>    2 - Once a day
>    3- At least once a week
>    4- Only on special occasions
>    5 – Never

Choose the answer that best describes your response to the following statement:
"I try hard to carry my religious beliefs over into all my other dealings in life."
>    1 – Strongly Agree
>    2 – Agree
>    3 – Disagree
>    4 – Strongly Disagree

*Forgiveness*
"Because of my religious or spiritual beliefs …"

I have forgiven myself for things that I have done wrong.
>    1 - Always or almost always
>    2 - Often
>    3- Seldom
>    4- Never

I have forgiven those who hurt me.
>    1 - Always or almost always
>    2- Often
>    3- Seldom
>    4- Never

I know that God forgives me.
>    1 - Always or almost always
>    2 - Often
>    3- Seldom
>    4- Never

*Organizational Religiousness*
How often do you go to religious services?
>    1 - More than once a week
>    2 - Every week or more often
>    3 - Once or twice a month
>    4 - Every month or so
>    5 - Once or twice a year
>    6 - Never

Besides religious services, how often do you take part in other activities at a place of worship?

1 - More than once a week
2 - Every week or more often
3 - Once or twice a month
4 - Every month or so
5 - Once or twice a year
6 - Never

*Overall Self-Ranking*
To what extent do you consider yourself a religious person?
    1 - Very religious
    2 - Moderately religious
    3 - Slightly religious
    4 - Not religious at all

To what extent do you consider yourself a spiritual person?
    1 - Very spiritual
    2 - Moderately spiritual
    3 - Slightly spiritual
    4 - Not spiritual at all

## 2 - Parental Monitoring

During your last year of high school, please indicate how often the following occurred.
For each statement:    1 = Always
                        2 = Most times
                        3 = Sometimes
                        4 = Hardly Ever
                        5 = Never

1 - When you got home from school, how often was an adult there within an hour?
2 - When you went to a party, how often was a supervising adult present at the party?
3 - When you wanted to go to a party, how often did your parents confirm that an adult would supervise the party?
4 - How often would your parents know if you can home an hour (or more) late on weekends?
5 - When you broke a rule set by your parents, for example, coming home past curfew, did your parents take away privileges?
6 - How often, before you went out, would you tell your parents when you would be back?
7 - When your parents were not home, how often would you sent them a text or leave a note for them about where you were going?
8 - When you went out and your plans changed unexpectedly, how often did you call or text your parents to let them know?
9 - When you went out, how often did you let your parents know where you planned to go?

## 3 - Student Sexual Attitudes

Listed below are several statements that reflect different attitudes about sex. For each statement fill in the response on the answer sheet that indicates how much you agree or disagree with that statement. Some of the items refer to a specific sexual relationship, while others refer to general attitudes and beliefs about sex. Whenever possible, answer the questions with your current partner in mind. If you are not currently dating anyone, answer the questions with your most recent partner in mind. If you have never had a sexual relationship, answer in terms of what you think your responses would most likely be.

For each statement:    A = Strongly agree with statement
B = Moderately agree with the statement
C = Neutral - neither agree nor disagree
D = Moderately disagree with the statement
E = Strongly disagree with the statement

**Permissiveness**
I do not need to be committed to a person to have sex with him/her.
Casual sex is acceptable.
I would like to have sex with many partners.
One-night stands are sometimes very enjoyable.
It is okay to have ongoing sexual relationships with more than one person at a time.
Sex as a simple exchange of favors is okay if both people agree to it.
The best sex is with no strings attached.
Life would have fewer problems if people could have sex more freely.
It is possible to enjoy sex with a person and not like that person very much.
It is okay for sex to be just good physical release.

**Birth Control**
Birth control is part of responsible sexuality.
A woman should share responsibility for birth control.
A man should share responsibility for birth control.

**Communion**
Sex is the closest form of communication between two people.
A sexual encounter between two people deeply in love is the ultimate human interaction.
At its best, sex seems to be the merging of two souls.
Sex is a very important part of life.
Sex is usually an intensive, almost overwhelming experience.

**Instrumentality**
Sex is best when you let yourself go and focus on your own pleasure.
Sex is primarily the taking of pleasure from another person.
The main purpose of sex is to enjoy oneself.
Sex is primarily physical.

Sex is primarily a bodily function, like eating.

## 4 - Student Sexual Behaviors

Have you ever had sexual intercourse?
A. Yes
B. No

How old were you when you had sexual intercourse for the first time?
A. I have never had sexual intercourse
B. 11 years old or younger
C. 12 years old
D. 13 years old
E. 14 years old
F. 15 years old
G. 16 years old
H. 17 years or older

During your life, with how many people have you had sexual intercourse?
A. I have never had sexual intercourse
B. 1 person
C. 2 people
D. 3 people
E. 4 people
F. 5 people
G. 6 or more people

During the past 3 months, with how many people did you have sexual intercourse?
A. I have never had sexual intercourse
B. I have had sexual intercourse, but not during the past 3 months
C. 1 person
D. 2 people
E. 3 people
F. 4 people
G. 5 people
H. 6 or more people

Did you drink alcohol or use drugs before you had sexual intercourse the last time?
A. I have never had sexual intercourse
B. Yes
C. No

The last time you had sexual intercourse, did you or your partner use a male condom?
A. I have never had sexual intercourse
B. Yes
C. No

D. Not applicable (e.g. neither I nor my partner is male)

The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy? (Select only one response.)
A. I have never had sexual intercourse
B. No method was used to prevent pregnancy
C. Birth control pills
D. Condoms
E. An IUD (such as Mirena or ParaGard) or implant (such as Implanon or Nexplanon)
F. A shot (such as Depo-Provera), patch (such as Ortho Evra), or birth control ring (such as NuvaRing)
G. Withdrawal or some other method
H. Not sure
I. None – I am not trying to prevent pregnancy
J. Not applicable (e.g. neither I nor my partner is female)

During your life, with whom have you had sexual contact?
A. I have never had sexual contact
B. Females
C. Males
D. Females and males 70.

Which of the following best describes you?
A. Heterosexual (straight)
B. Gay or lesbian
C. Bisexual
D. Not sure

Have you received the HPV vaccine?
A. Yes
B. No
C. Not sure

> *If yes:*
> Have you completed all 3 recommended doses of the HPV vaccine?
> > A. Yes
> > B. No
> > C. Not Sure
> If no (to either):
> How likely are you to receive the HPV vaccine (either as a first dose, or as a follow-up dose) in the next 12 months.
> > A. Extremely likely
> > B. Moderately likely
> > C. Slightly likely
> > D. Neither likely nor unlikely
> > E. Slightly unlikely

   F. Moderately unlikely
   G. Extremely unlikely

Have you ever been told by a doctor or nurse that you had any of the following? (Choose all that apply)
   A. Chlamydia
   B. Syphillis
   C. Gonorrhea
   D. HIV or AIDS
   E. Genital Herpes
   F. Genital Warts
   G. Hepatitis B
   H. Human Papillomavirus (HPV)
   I. None of the above

Have you ever been pregnant (or gotten someone pregnant)?
   A. Yes
   B. No
   C. Not applicable (e.g. neither I nor my partner is female)

   *If yes:*
   How many pregnancies have you ever had in your life? _____

   For each pregnancy, answer the following:
   How did the pregnancy end?
     Had baby, kept baby
     Had baby, adoption
     Miscarriage
     Abortion
     Currently Still Pregnant

   Did either you or your partner want to become pregnant at the time?
     Yes
     No

## 5 - Family Religiosity

For each item (1-9) below, please indicate:
   (1) the FREQUENCY your family is involved in these various activities
   (2) how IMPORTANT that item is to your family's religious life

   FREQUENCY SCALE       IMPORTANCE SCALE
   0 = never or not applicable    0 = not important or not applicable
   1 = yearly/a few times a year   1 = somewhat important
   2 = monthly/a few times a month  2 = important
   3 = about weekly      3 = very important

4 = more than once a week                    4 = extremely important
5 = about daily
6 = more than once a day

**Family Faith Activities:**
1. Family Prayer (family together other than at meals)
2. Family reading of scripture or other religious texts
3. Family singing or playing religious music/instruments
4. Family religious gatherings/activities/celebrations
5. Family use of religious media (e.g. Videos, radio, tv)
6. Family religious conversations at home
7. Saying/singing a blessing/grace/prayer at family meals
8. Parents praying with child or listening to her/his prayers
9. Couple prayer (husband and wife praying together)

Did you attend any of the following? (Select all that apply)
1 – Religious-affiliated elementary school
2 – Religious-affiliated middle school
3 – Religious-affiliated high school
4 – None of the above

Did you attend Sunday school or some other form of outside religious instruction (e.g. Hebrew school, Bible study, etc)?
1 – Yes
2 - No

## 6 - Family Sex Communication

Most adults who are important to me think I should not have sex while I'm a teenager.
1 – Strongly Agree
2 – Agree
3 – Disagree
4 – Strongly Disagree

My parents and I have talked about what is right and wrong in sexual behavior.
1 – Almost always
2 – Usually
3 – Some of the time
4 – Almost never

Have you talked to your parents about delaying your sexual activity?
1 – Yes
2 – No

Have you talked to your parents about birth control?

1 – Yes
2 – No

Have you talked to your parents about preventing STDs?
1 – Yes
2 – No

Have you ever been taught at home about the female menstrual cycle?
1 – Yes
2 – No

Have you ever been taught at home how to say 'NO' to sex?
1 – Yes
2 – No

Have you ever been taught at home about methods of birth control?
1 – Yes
2 – No

## 7 – Demographics

How old are you? _____

What is your gender
 Female
 Male
 Transgender

What year are you in college?
 Freshman / First year
 Sophomore / Second year
 Junior / Third year
 Senior / Fourth year
 Fifth year or more

What is your race/ethnicity? (Select all that apply)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or other Pacific Islander
 Hispanic or Latino
 White
 Other – Please specify. _____

Are you
 Single

Married
Separated / Divorced
Unmarried & Cohabiting

At the present time, what religion are you?
Roman Catholic
Orthodox (e.g. Eastern, Greek, Russian, Coptic, etc)
Protestant (e.g. Episcopal, Lutheran, Methodist, etc)
Jewish
Muslim
Hindu
Buddhist
Mormon
Atheist
Agnostic
Other – Please Specify. _____

Is this the same religion as one or both of your parents?
Yes
No
My parents do not practice any religion

*If no:*
What religion do your parents practice?
Roman Catholic
Orthodox (e.g. Eastern, Greek, Russian, Coptic, etc)
Protestant (e.g. Episcopal, Lutheran, Methodist, etc)
Judaism
Islam
Hinduism
Buddhism
Mormonism
Atheism
Agnosticism
Other – Please Specify. _____

What is the highest level of education your mother completed?
Elementary or middle school?
Some high school
High school graduate
Some college
Trade / technical / vocational training
College graduate
Some postgraduate work
Postgraduate degree
Not sure

What is the highest level of education your father completed?
> Elementary or middle school?
> Some high school
> High school graduate
> Some college
> Trade / technical / vocational training
> College graduate
> Some postgraduate work
> Postgraduate degree
> Not sure

Where were your parents born?
> Both parents were born in the United States
> One parent was born in the United States
> Both parents were born outside of the United States

Who lived in your household during high school? (Check all that apply)
> Mother
> Father
> Stepmother
> Stepfather
> Sibling(s)
> Grandparent(s)
> Aunt(s)
> Uncle(s)
> Cousin(s)
> Other (Please specify). _____

Where did you live before coming to University of Maryland?
(choose from the list of U.S. states, DC, or Outside the United States)

**Appendix F: Qualitative Questions**

(1) Having sex for the first time is sometimes a spur-of-the-moment decision, and sometimes a carefully planned event. Think back to your first sexual encounter (oral, vaginal, or anal). What were you thinking about? Did you worry about the reaction of your parents, or your friends, or anyone else? What kind of reaction were you expecting? Why? How did you feel after you had sex?

(2) Try to remember a specific conversation about sex that you had with a parent or other adult family member. What was the primary message of that conversation – for example, abstinence, safe sex, or morality? Do you remember how you felt, during and after the conversation? Is there anything you wish had been different, about that conversation or any other similar conversations you had in adolescence?

(3) Even as adults, we sometimes feel like we can hear our parents' voices in our heads, telling us how to act or what to say. You probably have more freedom now than you did in high school – if you don't live at home, your family doesn't always know what you're doing, where, and with whom; and even if you do live at home, your college schedule may allow you more unsupervised time. Do you feel that your family's opinions or beliefs are still influencing your behavior today, in particular your sexual behavior? How? Please give a specific example if possible.

**Appendix G: Descriptive Statistics**

Table 1. *Demographics of Analytic Sample (n=608)*

| Characteristics | n (%) |
|---|---|
| Age (n=605) | |
|    18 | 55 (9.1) |
|    19 | 86 (14.2) |
|    20 | 143 (23.6) |
|    21 | 194 (32.1) |
|    22 | 80 (13.2) |
|    23 | 20 (3.3) |
|    24 | 6 (1) |
|    25 | 6 (1) |
|    26 – 30 | 15 (2.5) |
| | |
| Race | |
|    White | 318 (52.3) |
|    Black / African American | 93 (15.3) |
|    Hispanic / Latino | 37 (6.1) |
|    Asian | 93 (15.3) |
|    Other (includes Multiple Races) | 67 (11) |
| | |
| Gender | |
|    Female | 467 (76.8) |
|    Male | 138 (22.7) |
|    Transgender | 3 (0.5) |
| | |
| Which of the following best describes you? | |
|    Heterosexual (straight) | 545 (89.6) |
|    Gay or Lesbian | 12 (2) |
|    Bisexual | 42 (6.9) |
|    Not Sure | 9 (1.5) |
| | |
| Year in School | |
|    Freshman / First Year | 75 (12.3) |
|    Sophomore / Second Year | 101 (16.6) |
|    Junior / Third Year | 166 (27.3) |
|    Senior / Fourth Year | 229 (37.7) |
|    Fifth Year or higher | 37 (6.1) |
| | |
| Sexual Relationship Status | |
|    No current sexual relationship | 253 (41.6) |
|    One casual partner | 74 (12.2) |
|    One serious (monogamous) partner | 244 (40.1) |
|    Multiple partners | 37 (6.1) |

Length of Current Sexual Relationship

| | |
|---|---|
| No current sexual relationship | 253 (41.6) |
| 0-6 months | 145 (23.8) |
| 6-12 months | 54 (8.9) |
| Longer than One Year | 156 (25.6) |

Religious Affiliation (n=604)

| | |
|---|---|
| Roman Catholic | 136 (22.5) |
| Christian (non-Catholic) | 158 (26.2) |
| Jewish | 88 (14.5) |
| Muslim | 27 (4.4) |
| Other Non-Christian | 65 (10.7) |
| Atheist/Agnostic | 130 (21.4) |

First Generation College Student
(n=598)

| | |
|---|---|
| No | 467 (78.1) |
| Yes | 131 (21.9) |

Parents' Birthplace (n=607)

| | |
|---|---|
| Both parents born in the U.S. | 338 (55.7) |
| One or both parents born outside the U.S. | 269 (44.2) |

Single Parent Household (during H.S.)

| | |
|---|---|
| No | 495 (81.4) |
| Yes | 113 (18.6) |

Multi-Generational Household (during H.S.)

| | |
|---|---|
| No | 553 (91) |
| Yes | 55 (9) |

Table 2. *Family Religiosity (Frequency) (n=608)*

|  | n (%) |
|---|---|
| **Family Prayer (other than at meals) (n=604)** | |
| Never/NA | 261 (43.2) |
| Yearly/A Few Times a Year | 138 (22.8) |
| Monthly/A Few Times a Month | 68 (11.3) |
| About Weekly | 43 (7.1) |
| More than once a week | 24 (4) |
| About Daily | 49 (8.1) |
| More than Once a Day | 21 (3.5) |
| **Family Reading of scripture or other religious texts (n=603)** | |
| Never/NA | 344 (56.6) |
| Yearly/A Few Times a Year | 124 (20.6) |
| Monthly/A Few Times a Month | 50 (8.2) |
| About Weekly | 39 (6.4) |
| More than once a week | 21 (3.5) |
| About Daily | 19 (3.1) |
| More than Once a Day | 6 (1) |
| **Family Singing or playing Religious Instruments/music (n=601)** | |
| Never/NA | 400 (66.6) |
| Yearly/A Few Times a Year | 87 (14.5) |
| Monthly/A Few Times a Month | 39 (6.4) |
| About Weekly | 4 (6.7) |
| More than once a week | 20 (3.3) |
| About Daily | 9 (1.5) |
| More than Once a Day | 5 (0.8) |
| **Family Religious Gatherings/Activities/Celebrations (n=601)** | 192 (31.9) |
| Never/NA | 224 (37.3) |
| Yearly/A Few Times a Year | 91 (15.0) |
| Monthly/A Few Times a Month | 57 (9.4) |
| About Weekly | 20 (3.3) |
| More than once a week | 9 (1.5) |
| About Daily | 8 (1.3) |
| More than Once a Day | |

Family Use of Religious Media (eg. Videos, radio, TV)
(n=600)

|  |  |
|---|---|
|  | 383 (63.8) |
| Never/NA | 81 (13.3) |
| Yearly/A Few Times a Year | 45 (7.4) |
| Monthly/A Few Times a Month | 40 (6.6) |
| About Weekly | 26 (4.3) |
| More than once a week | 15 (2.5) |
| About Daily | 10 (1.6) |
| More than Once a Day |  |

Family Religious Conversations at home (n=600)

|  |  |
|---|---|
| Never/NA |  |
| Yearly/A Few Times a Year |  |
| Monthly/A Few Times a Month | 204 (34) |
| About Weekly | 159 (26.5) |
| More than once a week | 93 (15.5) |
| About Daily | 61 (10.2) |
| More than Once a Day | 31 (5.1) |
|  | 40 (6.6) |
|  | 12 (2.0) |

Saying/singing a blessing/grace/prayer at family meals
(n=603)

|  |  |
|---|---|
| Never/NA | 220 (36.2) |
| Yearly/A Few Times a Year | 123 (20.4) |
| Monthly/A Few Times a Month | 42 (6.9) |
| About Weekly | 62 (10.2) |
| More than once a week | 27 (4.4) |
| About Daily | 88 (14.5) |
| More than Once a Day | 41 (6.7) |

Parents praying with child or listening to his/her prayers
(n=601)

|  |  |
|---|---|
| Never/NA | 332 (54.6) |
| Yearly/A Few Times a Year | 79 (13) |
| Monthly/A Few Times a Month | 49 (8.1) |
| About Weekly | 35 (5.8) |
| More than once a week | 35 (5.8) |
| About Daily | 51 (8.4) |
| More than Once a Day | 20 (3.3) |

Couple Prayer (husband and wife praying together)
(n=603)

|  |  | 444 (73.6) |
|---|---|---|
|  |  | 48 (8) |
| Never/NA |  | 31 (5.1) |
| Yearly/A Few Times a Year |  | 25 (4.1) |
| Monthly/A Few Times a Month |  | 14 (2.3) |
| About Weekly |  | 27 (4.5) |
| More than once a week |  | 14 (2.3) |
| About Daily |  |  |
| More than Once a Day |  |  |

Did You attend:

Religious-Affiliated Elementary School

|  | No | 453 (74.5) |
|---|---|---|
|  | Yes | 155 (25.5) |

Religious-Affiliated Middle School

|  | No | 487 (80.1) |
|---|---|---|
|  | Yes | 121 (19.1) |

Religious-Affiliated High School

|  | No | 512 (84.2) |
|---|---|---|
|  | Yes | 96 (15.8) |

Did you attend Sunday school or some other form of outside religious instruction? (n=606)

|  | No | 238 (39.3) |
|---|---|---|
|  | Yes | 368 (60.7) |

FAITHS Importance Total Score (n=484)
Mean = 9.63,
Median = 7,
Min: 0, Max: 54

FAITHS Frequency Total Score (n=586)
*Mean: 10.56*
*Median: 7*
*(min: 0, max: 54)*

FAITHS Frequency (n=586)

|  | Never/Infrequent | 357 (60.9) |
|---|---|---|
|  | Frequent | 229 (39.1) |

Table 3. *Family Sex Communication (n=608)*

|  | n (%) |
|---|---|
| Most adults who are important to me think I should not have sex while I am a teenager. (n=607) | |
| Strongly Agree | 219 (36.1) |
| Agree | 200 (32.9) |
| Disagree | 152 (25) |
| Strongly Disagree | 36 (5.9) |
| My parents and I have talked about what is right and wrong in sexual behavior. (n=607) | |
| Almost always | 107 (17.6) |
| Usually | 115 (18.9) |
| Some of the time | 147 (24.2) |
| Almost Never | 238 (39.2) |
| Have you talked to your parents about delaying your sexual activity? | |
| Yes | 154 (25.3) |
| No | 454 (74.7) |
| Have you talked to your parents about birth control? | |
| Yes | 351 (57.7) |
| No | 257 (42.3) |
| Have you talked to your parents about preventing STDs? | |
| Yes | 245 (40.3) |
| No | 363 (59.7) |
| Have you ever been taught at home about the female menstrual cycle? | |
| Yes | 416 (68.4) |
| No | 192 (31.6) |
| Have you ever been taught at home how to say 'No' to sex? | |
| Yes | 311 (51.2) |
| No | 297 (48.8) |
| Have you ever been taught at home about methods of birth control? | |
| Yes | 269 (44.2) |
| No | 339 (56) |
| Family Sex Education Total Score (No menstruation question) (n=608) | Mean: 0.95 (min: 0, max: 2) |
| Family Sex Communication Total Score (n=607) | Mean: 4.38 (min: 0, max: 9) |
| Family Sex Ed + Comm Total Score (No menstruation question) (n=607) | Mean: 5.33 (min: 0, max: 11) |

Table 4. *Parental Monitoring (n=608)*

*During your last year of high school ...*

|  | n (%) |
|---|---|
| **When you got home from school, how often was an adult there within the hour?** | |
| Always | 222 (36.6) |
| Most Times | 153 (25.2) |
| Sometimes | 106 (17.5) |
| Hardly Ever | 83 (13.7) |
| Never | 43 (7.1) |
| | |
| **When you went to a party, how often was a supervising adult present at the party?** | |
| Always | 46 (8.5) |
| Most Times | 113 (20.9) |
| Sometimes | 143 (26.5) |
| Hardly Ever | 152 (28.1) |
| Never | 86 (15.9) |
| | |
| **When you wanted to go to a party, how often did your parents confirm that an adult would supervise the party?** | |
| Always | 103 (18.9) |
| Most Times | 110 (20.2) |
| Sometimes | 128 (23.5) |
| Hardly Ever | 96 (17.6) |
| Never | 107 (19.7) |
| | |
| **How often would your parents know if you came home an hour (or more) late on weekends?** | |
| Always | 266 (48.7) |
| Most Times | 137 (25.1) |
| Sometimes | 73 (13.4) |
| Hardly Ever | 44 (8.1) |
| Never | 26 (4.8) |
| | |
| **When you broke a rule set by your parents, for example coming home past curfew, how often did your parents take away privileges?** | |
| Always | 108 (19.5) |
| Most Times | 122 (22) |
| Sometimes | 129 (23.3) |
| Hardly Ever | 115 (20.8) |
| Never | 80 (14.4) |

How often, before you went out, would you tell your parents when you would be back?

| | |
|---|---|
| Always | 252 (42.4) |
| Most Times | 194 (32.6) |
| Sometimes | 101 (17) |
| Hardly Ever | 33 (5.5) |
| Never | 15 (2.5) |

When your parents were not home, how often would you send them a text or leave a note for them about where you were going?

| | |
|---|---|
| Always | 246 (42.1) |
| Most Times | 179 (30.7) |
| Sometimes | 80 (13.7) |
| Hardly Ever | 45 (7.7) |
| Never | 34 (5.8) |

When you went out and your plans unexpectedly changed, how often did you call or text your parents to let them know?

| | |
|---|---|
| Always | 166 (27.7) |
| Most Times | 184 (30.7) |
| Sometimes | 142 (23.7) |
| Hardly Ever | 69 (11.5) |
| Never | 39 (6.5) |

When you went out, how often did you let your parents know where you planned to go?

| | |
|---|---|
| Always | 223 (37.2) |
| Most Times | 225 (37.5) |
| Sometimes | 115 (19.2) |
| Hardly Ever | 23 (3.8) |
| Never | 14 (2.3) |

| | |
|---|---|
| Parental Monitoring Total Score (Higher score = greater amount of monitoring) (n=460) | Mean: 23.29 Median: 24 (Min: 3, Max: 36) |

Table 5.1. *Student Sex Attitudes (n=608)*

|  | n (%) |
|---|---|
| I do not need to be committed to a person to have sex with him/her (n=607) | |
| Strongly Agree | 158 (26) |
| Moderately Agree | 142 (23.4) |
| Neutral | 83 (13.7) |
| Moderately Disagree | 92 (15.2) |
| Strongly Disagree | 132 (21.7) |
| | |
| Casual Sex Is Acceptable (n=607) | |
| | |
| Strongly Agree | 208 (34.3) |
| Moderately Agree | 165 (27.2) |
| Neutral | 92 (15.2) |
| Moderately Disagree | 60 (9.9) |
| Strongly Disagree | 82 (13.5) |
| | |
| I would like to have sex with many partners. | |
| Strongly Agree | 41 (6.7) |
| Moderately Agree | 68 (11.2) |
| Neutral | 131 (21.5) |
| Moderately Disagree | 137 (22.5) |
| Strongly Disagree | 231 (38) |
| | |
| One-night stands are sometimes very enjoyable (n=606) | |
| Strongly Agree | 89 (14.7) |
| Moderately Agree | 137 (22.6) |
| Neutral | 140 (23.1) |
| Moderately Disagree | 103 (17) |
| Strongly Disagree | 137 (22.6) |
| | |
| It is ok to have ongoing sexual relationships with more than one person at a time. | |
| Strongly Agree | 58 (9.5) |
| Moderately Agree | 101 (16.6) |
| Neutral | 98 (16.1) |
| Moderately Disagree | 138 (22.7) |
| Strongly Disagree | 213 (35) |
| | |
| Sex as a simple exchange of favors is ok if both people agree to it. | |
| Strongly Agree | 106 (17.4) |
| Moderately Agree | 154 (25.3) |
| Neutral | 126 (20.7) |
| Moderately Disagree | 108 (17.8) |
| Strongly Disagree | 114 (18.8) |

The best sex is with no strings attached (n=607)

| | |
|---|---|
| Strongly Agree | 13 (2.1) |
| Moderately Agree | 27 (4.4) |
| Neutral | 120 (19.8) |
| Moderately Disagree | 161 (26.5) |
| Strongly Disagree | 286 (47.1) |

Life would have fewer problems if people could have sex more freely.

| | |
|---|---|
| Strongly Agree | 54 (8.9) |
| Moderately Agree | 126 (20.8) |
| Neutral | 173 (28.5) |
| Moderately Disagree | 127 (20.9) |
| Strongly Disagree | 127 (20.9) |

It is possible to enjoy sex with a person and not like that person very much.

| | |
|---|---|
| Strongly Agree | 80 (13.2) |
| Moderately Agree | 185 (30.4) |
| Neutral | 120 (19.7) |
| Moderately Disagree | 123 (20.2) |
| Strongly Disagree | 100 (16.4) |

It is ok for sex to be just good physical release (n=607)

| | |
|---|---|
| Strongly Agree | 140 (23.1) |
| Moderately Agree | 220 (36.2) |
| Neutral | 119 (19.6) |
| Moderately Disagree | 65 (10.7) |
| Strongly Disagree | 63 (10.4) |

Birth control is part of sexual responsibility (n=604)

| | |
|---|---|
| Strongly Agree | 416 (68.9) |
| Moderately Agree | 126 (20.9) |
| Neutral | 44 (7.3) |
| Moderately Disagree | 9 (1.5) |
| Strongly Disagree | 9 (1.5) |

A woman should share responsibility for birth control (n=607)

| | |
|---|---|
| Strongly Agree | 373 (61.4) |
| Moderately Agree | 147 (24.2) |
| Neutral | 62 (10.2) |
| Moderately Disagree | 13 (2.1) |
| Strongly Disagree | 12 (2) |

A man should share responsibility for birth control.

| | |
|---|---|
| Strongly Agree | 387 (63.2) |
| Moderately Agree | 134 (22) |
| Neutral | 61 (10) |
| Moderately Disagree | 19 (3.1) |
| Strongly Disagree | 10 (1.6) |

Sex is the closest form of communication between two people.

| | |
|---|---|
| Strongly Agree | 81 (13.3) |
| Moderately Agree | 196 (32.2) |
| Neutral | 105 (17.3) |
| Moderately Disagree | 127 (20.9) |
| Strongly Disagree | 99 (16.3) |

A sexual encounter between two people deeply in love is the ultimate
human interaction (n=607)

| | |
|---|---|
| Strongly Agree | 186 (30.6) |
| Moderately Agree | 220 (36.2) |
| Neutral | 105 (17.3) |
| Moderately Disagree | 60 (9.9) |
| Strongly Disagree | 36 (5.9) |

At its best, sex seems to be the merging of two souls (n=606)

| | |
|---|---|
| Strongly Agree | 136 (22.4) |
| Moderately Agree | 187 (30.8) |
| Neutral | 149 (24.6) |
| Moderately Disagree | 87 (14.4) |
| Strongly Disagree | 47 (7.8) |

Sex is a very important part of life (n=607)

| | |
|---|---|
| Strongly Agree | 241 (39.7) |
| Moderately Agree | 230 (37.9) |
| Neutral | 102 (16.8) |
| Moderately Disagree | 21 (3.5) |
| Strongly Disagree | 13 (2.1) |

Sex is usually an intensive, almost overwhelming experience (n=607)

| | |
|---|---|
| Strongly Agree | 89 (14.7) |
| Moderately Agree | 227 (37.4) |
| Neutral | 185 (30.5) |
| Moderately Disagree | 86 (14.2) |
| Strongly Disagree | 20 (3.3) |

Sex is best when you let yourself go and focus on your own pleasure.

| | |
|---|---|
| Strongly Agree | 109 (17.9) |
| Moderately Agree | 181 (29.8) |
| Neutral | 162 (26.6) |
| Moderately Disagree | 119 (19.6) |
| Strongly Disagree | 37 (6.1) |

Sex is primarily the taking of pleasure from another person.

| | |
|---|---|
| Strongly Agree | 26 (4.3) |
| Moderately Agree | 97 (16) |
| Neutral | 170 (28) |
| Moderately Disagree | 211 (34.7) |
| Strongly Disagree | 104 (17.1) |

The main purpose of sex is to enjoy oneself (n=607)

| | |
|---|---|
| Strongly Agree | 71 (11.7) |
| Moderately Agree | 189 (31.1) |
| Neutral | 177 (29.2) |
| Moderately Disagree | 124 (20.4) |
| Strongly Disagree | 46 (7.6) |

Sex is primarily Physical (n=607)

| | |
|---|---|
| Strongly Agree | 42 (6.9) |
| Moderately Agree | 149 (24.5) |
| Neutral | 144 (23.7) |
| Moderately Disagree | 206 (33.9) |
| Strongly Disagree | 66 (10.9) |

Sex is primarily a bodily function, like eating.

| | |
|---|---|
| Strongly Agree | 33 (5.4) |
| Moderately Agree | 106 (17.4) |
| Neutral | 174 (28.6) |
| Moderately Disagree | 194 (31.9) |
| Strongly Disagree | 101 (16.6) |

| | |
|---|---|
| Student Sex Attitudes – Permissiveness Score (Lower score = Less of the attitude) | Mean: 18.61 Median: 20 (Min: 0, Max: 40) |
| Student Sex Attitudes – Birth Control Score (Lower score = Less of the attitude) | Mean: 10.37 Median: 12 (Min: 0, Max: 12) |

| Student Sex Attitudes – Communion Score (Lower score = Less of the attitude) | Mean: 12.85 Median: 13 (Min: 0, Max: 20) |
| --- | --- |
| Student Sex Attitudes – Instrumentality Score (Lower score = Less of the attitude) | Mean: 9.53 Median: 10 (Min: 0, Max: 20) |
| Student Sex Attitudes – Total Score (Lower score = Less of the attitude) | Mean: 51.46 Median: 52 (Min: 0, Max: 90) |

Table 5.2. *Student Sex Attitudes by Gender*

| | Male | | Female | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | M | SD | M | SD | *t*-test | *df* |
| Student Sex Attitudes – Total Score | 54.63 | 11.705 | 50.44 | 13.390 | -3.267** | 585 |
| Student Sex Attitudes – Permissiveness | 22.29 | 8.712 | 17.45 | 9.966 | -5.125*** | 596 |
| Student Sex Attitudes – Birth Control | 9.83 | 2.180 | 10.52 | 2.308 | 3.103** | 598 |
| Student Sex Attitudes – Communion | 13.20 | 3.894 | 12.77 | 4.139 | -1.078 | 598 |
| Student Sex Attitudes - Instrumentality | 9.42 | 4.206 | 9.53 | 3.783 | .294 | 601 |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 6. *Student Religiosity (n=608)*

|  | n (%) |
|---|---|
| **To what extent do you consider yourself a religious person?** | |
| Very religious | 57 (9.4) |
| Moderately Religious | 174 (28.6) |
| Slightly Religious | 189 (31.1) |
| Not at all religious | 188 (30.9) |
| | |
| **To what extent do you consider yourself a spiritual person?** | |
| Very spiritual | 93 (15.3) |
| Moderately spiritual | 206 (33.9) |
| Slightly spiritual | 189 (31.1) |
| Not at all spiritual | 120 (19.7) |
| **How often do you pray privately in places other than at a religious service?** | |
| More than once a day | 65 (10.7) |
| Once a day | 54 (8.9) |
| A few times a week | 68 (11.2) |
| Once a week | 26 (4.3) |
| A few times a month | 64 (10.5) |
| Once a month | 35 (5.8) |
| Less than once a month | 93 (15.3) |
| Never | 203 (33.4) |
| | |
| **Within your religious or spiritual tradition, how often do you meditate?** | |
| More than once a day | 20 (3.3) |
| Once a day | 28 (4.6) |
| A few times a week | 40 (6.6) |
| Once a week | 19 (3.1) |
| A few times a month | 40 (6.6) |
| Once a month | 32 (5.3) |
| Less than once a month | 99 (16.3) |
| Never | 330 (54.3) |
| | |
| **How often do you watch or listen to religious programs on TV or radio? (n=607)** | |
| More than once a day | 10 (1.6) |
| Once a day | 6 (1) |
| A few times a week | 28 (4.6) |
| Once a week | 18 (3) |
| A few times a month | 29 (4.8) |
| Once a month | 14 (2.3) |
| Less than once a month | 88 (14.5) |
| Never | 414 (68.1) |

How often do you read sacred religious texts (e.g. the Bible, Torah, Talmud, Koran, etc) or other religious literature?

| | |
|---|---|
| More than once a day | 11 (1.8) |
| Once a day | 24 (3.9) |
| A few times a week | 40 (6.6) |
| Once a week | 24 (3.9) |
| A few times a month | 39 (6.4) |
| Once a month | 27 (4.4) |
| Less than once a month | 124 (20.4) |
| Never | 319 (52.5) |

How often are prayers or grace said before or after meals in your home?

| | |
|---|---|
| At all meals | 116 (19.1) |
| Once a day | 39 (6.4) |
| At least once a week | 47 (7.7) |
| Only on special occasions | 205 (33.7) |
| Never | 201 (33.1) |

"I try hard to carry my religious beliefs over into all my other dealings in life"

| | |
|---|---|
| Strongly agree | 85 (14) |
| Agree | 207 (34) |
| Disagree | 147 (24.2) |
| Strongly disagree | 169 (27.8) |

"Because of my religious or spiritual beliefs, I have forgiven myself for things that I have done wrong" (n=607)

| | |
|---|---|
| Always or almost always | 129 (21.3) |
| Often | 209 (34.4) |
| Seldom | 144 (23.7) |
| Never | 125 (20.6) |

"Because of my religious or spiritual beliefs, I have forgiven those who hurt me" (n=605)

| | |
|---|---|
| Always or almost always | 132 (21.8) |
| Often | 258 (42.6) |
| Seldom | 94 (15.5) |
| Never | 121 (20) |

"Because of my religious or spiritual beliefs, I know that God forgives me" (n=604)

| | |
|---|---|
| Always or almost always | 219 (36.3) |
| Often | 153 (25.3) |
| Seldom | 75 (12.4) |
| Never | 157 (26) |

How often do you go to religious services?

| | |
|---|---|
| More than once a week | 26 (4.3) |
| Every week or more often | 80 (13.2) |
| Once or twice a month | 70 (11.5) |
| Every month or so | 83 (13.7) |
| Once or twice a year | 197 (32.4) |
| Never | 152 (25) |

Besides religious services, how often do you take part in other activities at a place of worship?

| | |
|---|---|
| More than once a week | 24 (3.9) |
| Every week or more often | 42 (6.9) |
| Once or twice a month | 46 (7.6) |
| Every month or so | 59 (9.7) |
| Once or twice a year | 131 (21.5) |
| Never | 306 (50.3) |

| | |
|---|---|
| Student Religiosity – Overall Self-Ranking (Lower # = Less of Item being measured) | Mean: 2.61 Median: 2.5 (Min: 0, Max: 6) |
| Student Religiosity – Private Practice (Lower # = Less of Item being measured) | Mean: 9 Median: 7 (Min: 0, Max: 35) |
| Student Religiosity – Forgiveness (Lower # = Less of Item being measured) | Mean: 4.95 Median: 6 (Min: 0. Max: 9) |
| Student Religiosity – Organizational Religiousness (Lower # = Less of Item being measured) | Mean: 2.79 Median: 2 (Min: 0, Max: 10) |
| Student Religiosity – Total Score (Lower # = Less of Item being measured) | Mean: 19.41 Median: 17 (Min: 0, Max: 58) |

Table 7. *Student Sexual Behaviors (n=608)*

|  |  | n (%) |
|---|---|---|
| **Ever had oral sex (n=607)** |  |  |
|  | Yes | 478 (78.7) |
|  | No | 129 (21.3) |
| **Ever had unprotected oral sex? (n=478)** |  |  |
|  | Yes | 460 (96.2) |
|  | No | 18 (3.8) |
| **Ever had anal sex** |  |  |
|  | Yes | 142 (23.4) |
|  | No | 466 (76.6) |
| **Ever had unprotected anal sex? (n=142)** |  |  |
|  | Yes | 106 (74.6) |
|  | No | 36 (25.4) |
| **Ever had vaginal sex** |  |  |
|  | Yes | 438 (72) |
|  | No | 170 (28) |
| **Ever had unprotected vaginal sex? (n=438)** |  |  |
|  | Yes | 371 (84.7) |
|  | No | 67 (15.3) |
| **At last vaginal sex, what method was used to prevent pregnancy? (Select all that apply)** |  |  |
|  | No method | 27 () |
|  | Birth Control Pills | 243 () |
|  | Condoms | 196 () |
|  | IUD/Implant | 40 () |
|  | Shot, Patch, or Ring | 18 () |
|  | Withdrawal or Other Method | 120 (1) |
|  | Not Sure | 5 () |
|  | Not Applicable | 9 () |
| **Age at first sex (oral, vaginal, or anal) (n=607)** |  |  |
|  | Never had sex | 113 (18.6) |
|  | 11 or younger | 3 (0.5) |
|  | 12 | 3 (0.5) |
|  | 13 | 12 (2) |
|  | 14 | 29 (4.8) |
|  | 15 | 69 (11.4) |
|  | 16 | 96 (15.8) |
|  | 17 or older | 282 (46.5) |

Number of Lifetime Partners (oral, vaginal, or anal)

| | |
|---|---|
| Never had sex | 115 (18.9) |
| 1 | 96 (15.8) |
| 2 | 61 (10) |
| 3 | 60 (9.9) |
| 4 | 39 (6.4) |
| 5 | 46 (7.6) |
| 6 or more | 191 (31.4) |

During the past 3 months, # of partners (oral, vaginal, or anal) (n=607)

| | |
|---|---|
| Never had sex | 116 (19.1) |
| Had sex, but not in the past 3 months | 76 (12.5) |
| 1 | 316 (52.1) |
| 2 | 48 (7.9) |
| 3 | 30 (4.9) |
| 4 | 8 (1.3) |
| 5 | 7 (1.2) |
| 6 or more | 6 (1) |

Did you use alcohol or drugs before you had sex the last time (oral, vaginal, or anal)

| | |
|---|---|
| Never had sex | 113 (18.6) |
| Yes | 177 (29.1) |
| No | 318 (52.3) |

During your life, with whom have you had sexual contact?

| | |
|---|---|
| Never had sexual contact | 87 (14.3) |
| Females | 101 (16.6) |
| Males | 373 (61.3) |
| Females & Males | 47 (7.7) |

Which of the following best describes you?

| | |
|---|---|
| Heterosexual (straight) | 545 (89.6) |
| Gay or Lesbian | 12 (2) |
| Bisexual | 42 (6.9) |
| Not Sure | 9 (1.5) |

Have you received the HPV vaccine?

| | |
|---|---|
| Yes | 394 (64.8) |
| No | 120 (19.7) |
| Not Sure | 94 (15.5) |

Have you completed all three recommended doses of the HPV vaccine?
(n=394)

| | | |
|---|---|---|
| | Yes | 329 (83.5) |
| | No | 41 (10.4) |
| | Not Sure | 24 (6.1) |

How likely are you to receive the HPV vaccine (either as a first dose, or as a follow-up dose) in the next 12 months? (n=279 – the 'No' and 'Not Sure' cohort)

| | | |
|---|---|---|
| | Extremely Likely | 34 (12.2) |
| | Moderately Likely | 24 (8.6) |
| | Slightly Likely | 33 (11.8) |
| | Neither likely nor unlikely | 72 (25.8) |
| | Slightly unlikely | 15 (5.4) |
| | Moderately unlikely | 31 (11.1) |
| | Extremely unlikely | 70 (25.1) |

Ever been told by a doctor or nurse that you have any of the following? (Choose all that apply)

| | | |
|---|---|---|
| | Chlamydia | 17 (2.8) |
| | Syphilis | 1 (0.2) |
| | Gonorrhea | 3 (0.5) |
| | HIV or AIDS | 1 (0.2) |
| | Genital Herpes | 7 (1.2) |
| | Genital Warts | 1 (0.2) |
| | Hepatitis B | 2 (0.3) |
| | HPV | 14 (2.3) |

Ever been pregnant or gotten someone pregnant?

| | | |
|---|---|---|
| | Yes | 15 (2.5) |
| | No | 563 (92.6) |
| | Not applicable | 30 (4.9) |

How many pregnancies in your life?

| | | |
|---|---|---|
| | 1 | 11 |
| | 2 | 4 |

Pregnancy Prevention at Last Vaginal Sex (n=438)

| | | |
|---|---|---|
| | Condoms Plus | 132 (30.1) |
| | Condoms Only | 64 (14.6) |
| | BC Pills Only | 147 (33.6) |
| | LARC Only | 32 (7.3) |
| | Shot/Patch/Ring Only | 10 (2.3) |
| | Withdrawal Only | 23 (5.3) |
| | No Method | 23 (5.3) |
| | Not Sure / NA | 7 (1.6) |

Pregnancy Prevention at Last Vaginal Sex (n=438)

| | | |
|---|---|---|
| | Any | 385 (87.9) |
| | None | 46 (10.5) |
| | Not Sure/NA | 7 (1.6) |

Condom Use at Last Vaginal Sex (n=438)

| | | |
|---|---|---|
| | Yes | 196 (44.7) |
| | No | 235 (53.7) |
| | Not Sure/NA | 7 (1.6) |

Age at First Sex (n=494)

| | | |
|---|---|---|
| | 16 or younger | 212 (42.9) |
| | 17 or older | 282 (57.1) |

Substance Use at Last Sex (n=495)

| | | |
|---|---|---|
| | Yes | 177 (35.8) |
| | No | 318 (64.2) |

Multiple Lifetime Partners (n=493)

| | | |
|---|---|---|
| | 3 or fewer | 217 (44) |
| | 4 or more | 276 (56) |

Only Had Oral Sex

| | | |
|---|---|---|
| | Yes | 47 (9.5) |
| | No | 450 (90.5) |

Gender of Lifetime Sexual Partners (by Gender)

| | | |
|---|---|---|
| | Hetero Females | 361 (59.4) |
| | Homo Females | 6 (1) |
| | Bi Females | 34 (5.6) |
| | Hetero Males | 95 (15.6) |
| | Homo Males | 12 (2) |
| | Bi Males | 11 (1.8) |
| NA (Male or Female & Never had sexual contact, or Transgender) | | 89 (14.6) |

**Appendix H: Bivariate Associations of Covariates with Dependent Variables**
Table 8.1. *Bivariate Associations of Covariates with Sexual Activity 1 (Multiple Lifetime Partners (Oral, Vaginal, or Anal))*

| | Multiple Lifetime Partners | | |
|---|---|---|---|
| | 3 or fewer partners | 4 or more partners | $X^2$ |
| **Age** | | | AOR = 1.198** |
| **Gender** | | | .178 |
| Female (n=375) | 163 (43.5) | 212 (56.5) | |
| Male (n=116) | 53 (45.7) | 63 (54.3) | |
| **Race** | | | 8.275+ |
| White (n=279) | 115 (41.2) | 164 (58.8) | |
| Black/African American (n=63) | 30 (47.6) | 33 (52.4) | |
| Hispanic/Latino (n=33) | 16 (48.5) | 17 (51.5) | |
| Asian (n=66) | 38 (57.6) | 28 (42.4) | |
| Other (Includes Multiple Races) (n=52) | 18 (34.6) | 34 (65.4) | |
| **Religion** | | | 9.924+ |
| Roman Catholic (n=116) | 52 (44.8) | 64 (55.2) | |
| Christian (non-Catholic) (n=113) | 56 (49.6) | 57 (50.4) | |
| Jewish (n=78) | 26 (33.3) | 52 (66.7) | |
| Muslim (n=12) | 7 (58.3) | 5 (41.7) | |
| Other Non-Christian (n=52) | 29 (55.8) | 23 (44.2) | |
| Atheist/Agnostic (n=119) | 47 (39.5) | 72 (60.5) | |
| **Sexual Relationship Status** | | | 55.002*** |
| No current Sexual Relationship (n=140) | 86 (61.4) | 54 (38.6) | |
| One Casual Partner (n=74) | 18 (24.3) | 56 (75.7) | |
| One Serious Partner (Monogamous) (n=242) | 112 (46.3) | 130 (53.7) | |
| Multiple Casual Partners (n=37) | 1 (2.7) | 36 (97.3) | |
| **First Generation College Student** | | | .067 |
| Yes (n=114) | 49 (43) | 65 (57) | |
| No (n=372) | 165 (44.4) | 207 (55.6) | |
| **Parents' Birthplace** | | | 3.582* |
| Both parents born in the U.S. (n=293) | 119 (40.6) | 174 (59.4) | |
| One or both parents born outside of the U.S. (n=199) | 98 (49.2) | 101 (50.8) | |
| **Single Parent Household (during HS)** | | | 2.681 |
| Yes (n=103) | 38 (36.9) | 65 (63.1) | |
| No (n=390) | 179 (45.9) | 211 (54.1) | |
| **Multi-Generational Household (during HS)** | | | .000 |
| Yes (n=41) | 18 (43.9) | 23 (56.1) | |
| No (n=452) | 199 (44) | 253 (56) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

Table 8.2. *Bivariate Associations of Covariates with Sexual Activity 2 (Age at First Sex)*

| | Age at First Sex | | |
| --- | --- | --- | --- |
| | 16 or younger | 17 or older | $X^2$ |
| **Age** | | | AOR = 1.114* |
| **Gender** | | | .410 |
| Female (n=376) | 165 (43.9) | 211 (56.1) | |
| Male (n=116) | 47 (40.5) | 69 (59.5) | |
| **Race** | | | 9.799* |
| White (n=279) | 125 (44.8) | 154 (55.2) | |
| Black/African American (n=65) | 25 (38.5) | 40 (61.5) | |
| Hispanic/Latino (n=33) | 17 (51.5) | 16 (48.5) | |
| Asian (n=65) | 18 (27.7) | 47 (72.3) | |
| Other (Includes Multiple Races) (n=52) | 27 (51.9) | 25 (48.1) | |
| **Religion** | | | 4.010 |
| Roman Catholic (n=117) | 49 (41.9) | 68 (58.1) | |
| Christian (non-Catholic) (n=113) | 45 (39.8) | 68 (60.2) | |
| Jewish (n=78) | 39 (50) | 39 (50) | |
| Muslim (n=12) | 4 (33.3) | 8 (66.7) | |
| Other Non-Christian (n=53) | 19 (35.8) | 34 (64.2) | |
| Atheist/Agnostic (n=118) | 54 (45.8) | 64 (54.2) | |
| **Sexual Relationship Status** | | | 12.276** |
| No current Sexual Relationship (n=141) | 50 (35.5) | 91 (64.5) | |
| One Casual Partner (n=74) | 42 (56.8) | 32 (43.2) | |
| One Serious Partner (Monogamous) (n=242) | 99 (40.9) | 143 (59.1) | |
| Multiple Casual Partners (n=37) | 21 (56.8) | 16 (43.2) | |
| **First Generation College Student** | | | 1.071 |
| Yes (n=114) | 53 (46.5) | 61 (53.5) | |
| No (n=373) | 153 (41) | 220 (59) | |
| **Parents' Birthplace** | | | 4.605* |
| Both parents born in the U.S. (n=294) | 138 (46.9) | 156 (53.1) | |
| One or both parents born outside of the U.S. (n=199) | 74 (37.2) | 125 (62.8) | |
| **Single Parent Household (during HS)** | | | 4.806* |
| Yes (n=103) | 54 (52.4) | 49 (47.6) | |
| No (n=391) | 158 (40.4) | 233 (59.6) | |
| **Multi-Generational Household (during HS)** | | | 1.403 |
| Yes (n=41) | 14 (34.1) | 27 (65.9) | |
| No (n=453) | 198 (43.7) | 255 (56.3) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, ⁺p < 0.1*

Table 8.3. *Bivariate Associations of Covariates with Sexual Activity 3 (Ever Had Oral Sex)*

| | Ever Oral | | |
| --- | --- | --- | --- |
| | Yes | No | $X^2$ |
| **Age** | | | AOR = 1.119 |
| **Gender** | | | 1.013 |
| Female (n=466) | 363 (77.9) | 103 (22.1) | |
| Male (n=138) | 113 (81.9) | 25 (18.1) | |
| **Race** | | | 33.178*** |
| White (n=317) | 275 (86.8) | 42 (13.2) | |
| Black/African American (n=93) | 60 (64.5) | 33 (35.5) | |
| Hispanic/Latino (n=37) | 30 (81.1) | 7 (18.9) | |
| Asian (n=93) | 61 (65.6) | 32 (34.4) | |
| Other (Includes Multiple Races) (n=67) | 52 (77.6) | 15 (22.4) | |
| **Religion** | | | 44.987*** |
| Roman Catholic (n=136) | 114 (83.8) | 22 (16.2) | |
| Christian (non-Catholic) (n=158) | 108 (68.4) | 50 (31.6) | |
| Jewish (n=87) | 76 (87.4) | 11 (12.6) | |
| Muslim (n=27) | 13 (48.1) | 14 (51.9) | |
| Other Non-Christian (n=65) | 46 (70.8) | 19 (29.2) | |
| Atheist/Agnostic (n=130) | 118 (90.8) | 12 (9.2) | |
| **Sexual Relationship Status** | | | 167.347*** |
| No current Sexual Relationship (n=253) | 135 (53.4) | 118 (46.6) | |
| One Casual Partner (n=74) | 72 (97.3) | 2 (2.7) | |
| One Serious Partner (Monogamous) (n=244) | 235 (96.3) | 9 (3.7) | |
| Multiple Casual Partners (n=36) | 36 (100) | - | |
| **First Generation College Student** | | | 1.269 |
| Yes (n=131) | 108 (82.4) | 23 (17.6) | |
| No (n=466) | 363 (77.9) | 103 (22.1) | |
| **Parents' Birthplace** | | | 20.626*** |
| Both parents born in the U.S. (n=337) | 288 (85.5) | 49 (14.5) | |
| One or both parents born outside of the U.S. (n=269) | 189 (70.3) | 80 (29.7) | |
| **Single Parent Household (during HS)** | | | 7.883** |
| Yes (n=113) | 100 (88.5) | 13 (11.5) | |
| No (n=494) | 378 (76.5) | 116 (23.5) | |
| **Multi-Generational Household (during HS)** | | | 3.370+ |
| Yes (n=55) | 38 (69.1) | 17 (30.9) | |
| No (n=552) | 440 (79.7) | 112 (20.3) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

Table 8.4. *Bivariate Associations of Covariates with Sexual Activity 4 (Ever Had Vaginal Sex)*

| | Ever Had Vaginal Sex | | |
| --- | --- | --- | --- |
| | Yes | No | $X^2$ |
| **Age** | | | AOR = 1.140* |
| **Gender** | | | .924 |
| Female (n=467) | 341 (73) | 126 (27) | |
| Male (n=138) | | | |
| **Race** | | | 32.600*** |
| White (n=318) | 255 (80.2) | 63 (19.8) | |
| Black/African American (n=93) | 50 (53.8) | 43 (46.2) | |
| Hispanic/Latino (n=37) | 27 (73) | 10 (27) | |
| Asian (n=93) | 56 (60.2) | 37 (39.8) | |
| Other (Includes Multiple Races) (n=67) | 50 (74.6) | 17 (25.4) | |
| **Religion** | | | 35.473*** |
| Roman Catholic (n=136) | 106 (77.9) | 30 (22.1) | |
| Christian (non-Catholic) (n=158) | 103 (65.2) | 55 (34.8) | |
| Jewish (n=88) | 69 (78.4) | 19 (21.6) | |
| Muslim (n=27) | 9 (33.3) | 18 (66.7) | |
| Other Non-Christian (n=65) | 42 (64.6) | 23 (35.4) | |
| Atheist/Agnostic (n=119) | 106 (81.5) | 24 (18.5) | |
| **Sexual Relationship Status** | | | 180.732*** |
| No current Sexual Relationship (n=253) | 109 (43.1) | 144 (56.9) | |
| One Casual Partner (n=74) | 70 (94.6) | 4 (5.4) | |
| One Serious Partner (Monogamous) (n=244) | 226 (92.6) | 18 (7.4) | |
| Multiple Casual Partners (n=37) | 33 (89.2) | 4 (10.8) | |
| **First Generation College Student** | | | 3.913* |
| Yes (n=131) | 104 (79.4) | 27 (20.6) | |
| No (n=467) | 330 (70.7) | 137 (29.3) | |
| **Parents' Birthplace** | | | 20.139*** |
| Both parents born in the U.S. (n=338) | 268 (79.3) | 70 (20.7) | |
| One or both parents born outside of the U.S. (n=269) | 169 (62.8) | 100 (37.2) | |
| **Single Parent Household (during HS)** | | | 8.561** |
| Yes (n=113) | 94 (83.2) | 19 (16.8) | |
| No (n=495) | 344 (69.5) | 151 (30.5) | |
| **Multi-Generational Household (during HS)** | | | 3.136+ |
| Yes (n=55) | 34 (61.8) | 21 (38.2) | |
| No (n=553) | 404 (73.1) | 149 (26.9) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

Table 8.5. *Bivariate Associations of Covariates with Sexual Activity 5 (Ever Had Anal Sex)*

| | Ever had Anal Sex (n= | | |
| --- | --- | --- | --- |
| | Yes | No | $X^2$ |
| **Age** | | | AOR = 1.260*** |
| **Gender** | | | 2.283 |
| Female (n=467) | 103 (22.1) | 364 (77.9) | |
| Male (n=138) | 39 (28.3) | 99 (71.7) | |
| **Race** | | | 7.528[+] |
| White (n=318) | 81 (25.5) | 237 (74.5) | |
| Black/African American (n=93) | 13 (14) | 80 (86) | |
| Hispanic/Latino (n=37) | 6 (16.2) | 31 (83.8) | |
| Asian (n=93) | 26 (28) | 67 (72) | |
| Other (Includes Multiple Races) (n=67) | 16 (23.9) | 51 (76.1) | |
| **Religion** | | | 13.129* |
| Roman Catholic (n=136) | 30 (22.1) | 106 (77.9) | |
| Christian (non-Catholic) (n=158) | 35 (22.2) | 123 (77.8) | |
| Jewish (n=88) | 15 (17) | 73 (83) | |
| Muslim (n=27) | 2 (7.4) | 25 (92.6) | |
| Other Non-Christian (n=65) | 17 (26.2) | 48 (73.8) | |
| Atheist/Agnostic (n=130) | 43 (33.1) | 87 (66.9) | |
| **Sexual Relationship Status** | | | 42.564*** |
| No current Sexual Relationship (n=253) | 27 (10.7) | 226 (89.3) | |
| One Casual Partner (n=74) | 20 (27) | 54 (73) | |
| One Serious Partner (Monogamous) (n=244) | 79 (32.4) | 165 (67.6) | |
| Multiple Casual Partners (n=37) | 16 (43.2) | 21 (56.8) | |
| **First Generation College Student** | | | 6.999** |
| Yes (n=131) | 42 (32.1) | 89 (67.9) | |
| No (n=467) | 98 (21) | 369 (79) | |
| **Parents' Birthplace** | | | .320 |
| Both parents born in the U.S. (n=338) | 82 (24.3) | 256 (75.7) | |
| One or both parents born outside of the U.S. (n=269) | 60 (22.3) | 209 (77.7) | |
| **Single Parent Household (during HS)** | | | 5.606* |
| Yes (n=113) | 36 (31.9) | 77 (68.1) | |
| No (n=495) | 106 (21.4) | 389 (78.6) | |
| **Multi-Generational Household (during HS)** | | | 1.928 |
| Yes (n=55) | 17 (30.9) | 38 (69.1) | |
| No (n=553) | 125 (22.6) | 428 (77.4) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

Table 8.6. *Bivariate Associations of Covariates with Sexual Activity 6 (Only Had Oral Sex)*

| | Only Had Oral Sex | | |
|---|---|---|---|
| | Yes | No | $X^2$ |
| **Age** | | | AOR = 0.811* |
| **Gender** | | | 0.517 |
| Female (n=379) | 34 (9) | 345 (91) | |
| Male (n=116) | 13 (11.2) | 103 (88.8) | |
| **Race** | | | 12.587* |
| White (n=280) | 21 (7.5) | 259 (92.5) | |
| Black/African American (n=65) | 12 (18.5) | 53 (81.5) | |
| Hispanic/Latino (n=33) | 5 (15.2) | 28 (84.8) | |
| Asian (n=67) | 8 (11.9) | 59 (88.1) | |
| Other (Includes Multiple Races) (n=52) | 1 (1.9) | 51 (98.1) | |
| **Religion** | | | 10.278 |
| Roman Catholic (n=117) | 9 (7.7) | 108 (92.3) | |
| Christian (non-Catholic) (n=114) | 8 (7) | 106 (93) | |
| Jewish (n=77) | 8 (10.4) | 69 (89.6) | |
| Muslim (n=13) | 4 (30.8) | 9 (69.2) | |
| Other Non-Christian (n=53) | 8 (15.1) | 45 (84.9) | |
| Atheist/Agnostic (n=120) | 10 (8.3) | 110 (91.7) | |
| **Sexual Relationship Status** | | | 34.183*** |
| No current Sexual Relationship (n=145) | 31 (21.4) | 114 (78.6) | |
| One Casual Partner (n=74) | 4 (5.4) | 70 (94.6) | |
| One Serious Partner (Monogamous) (n=242) | 11 (4.5) | 231 (95.5) | |
| Multiple Casual Partners (n=36) | 1 (2.8) | 35 (97.2) | |
| **First Generation College Student** | | | 0.981 |
| Yes (n=114) | 8 (7) | 106 (93) | |
| No (n=376) | 38 (10.1) | 338 (89.9) | |
| **Parents' Birthplace** | | | 3.342 |
| Both parents born in the U.S. (n=294) | 22 (7.5) | 272 (92.5) | |
| One or both parents born outside of the U.S. (n=202) | 25 (12.4) | 177 (87.6) | |
| **Single Parent Household (during HS)** | | | 2.001 |
| Yes (n=103) | 41 (10.4) | 353 (89.6) | |
| No (n=394) | 6 (5.8) | 97 (94.2) | |
| **Multi-Generational Household (during HS)** | | | 1.249 |
| Yes (n=42) | 6 (14.3) | 26 (85.7) | |
| No (n=455) | 41 (9) | 414 (91) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

Table 9.1. *Bivariate Associations of Covariates with Sexual Risk 1 (Substance Use before Last Sex)*

|  | Substance Use Before Last Sex | | |
|---|---|---|---|
|  | Yes | No | $X^2$ |
| **Age** |  |  | AOR = 1.015 |
| **Gender** |  |  | 3.953* |
| Female (n=378) | 126 (33.3) | 252 (66.7) |  |
| Male (n=115) | 50 (43.5) | 65 (56.5) |  |
| **Race** |  |  | 6.919 |
| White (n=279) | 104 (37.3) | 175 (62.7) |  |
| Black/African American (n=66) | 16 (24.2) | 50 (75.8) |  |
| Hispanic/Latino (n=33) | 16 (48.3) | 17 (51.5) |  |
| Asian (n=65) | 21 (32.3) | 44 (67.7) |  |
| Other (Includes Multiple Races) (n=52) | 20 (38.5) | 32 (61.5) |  |
| **Religion** |  |  | 5.075 |
| Roman Catholic (n=117) | 42 (35.9) | 75 (64.1) |  |
| Christian (non-Catholic) (n=114) | 40 (35.1) | 74 (64.9) |  |
| Jewish (n=78) | 36 (46.2) | 42 (53.8) |  |
| Muslim (n=12) | 3 (25) | 9 (75) |  |
| Other Non-Christian (n=52) | 16 (30.8) | 36 (69.2) |  |
| Atheist/Agnostic (n=119) | 40 (33.6) | 79 (66.4) |  |
| **Sexual Relationship Status** |  |  | 37.809*** |
| No current Sexual Relationship (n=143) | 59 (41.3) | 84 (58.7) |  |
| One Casual Partner (n=74) | 38 (51.4) | 36 (48.6) |  |
| One Serious Partner (Monogamous) (n=242) | 57 (23.6) | 185 (76.4) |  |
| Multiple Casual Partners (n=36) | 23 (63.9) | 13 (36.1) |  |
| **First Generation College Student** |  |  | 3.451+ |
| Yes (n=114) | 33 (28.9) | 81 (71.1) |  |
| No (n=374) | 144 (38.5) | 230 (61.5) |  |
| **Parents' Birthplace** |  |  | 1.209 |
| Both parents born in the U.S. (n=294) | 99 (33.7) | 195 (66.3) |  |
| One or both parents born outside of the U.S. (n=200) | 77 (38.5) | 123 (61.5) |  |
| **Single Parent Household (during HS)** |  |  | .251 |
| Yes (n=103) | 39 (37.9) | 64 (62.1) |  |
| No (n=392) | 138 (35.2) | 254 (64.8) |  |
| **Multi-Generational Household (during HS)** |  |  | .341 |
| Yes (n=40) | 16 (40.0) | 24 (60.0) |  |
| No (n=455) | 161 (35.4) | 294 (64.6) |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

Table 9.2. *Bivariate Associations of Covariates with Sexual Risk 2 (Condom Use at Last Vaginal Sex)*

| | Condom Use at Last Vaginal Sex | | |
| --- | --- | --- | --- |
| | No | Yes | $X^2$ |
| **Age** | | | AOR = .920 |
| **Gender** | | | .169 |
| Female (n=339) | 187 (55.2) | 152 (44.8) | |
| Male (n=91) | 48 (52.7) | 43 (47.3) | |
| **Race** | | | 7.101 |
| White (n=251) | 145 (57.8) | 106 (42.2) | |
| Black/African American (n=50) | 22 (44) | 28 (56) | |
| Hispanic/Latino (n=27) | 16 (59.3) | 11 (40.7) | |
| Asian (n=56) | 24 (42.9) | 32 (57.1) | |
| Other (Includes Multiple Races) (n=47) | 28 (59.6) | 19 (40.4) | |
| **Religion** | | | 5.083 |
| Roman Catholic (n=103) | 60 (58.3) | 43 (41.7) | |
| Christian (non-Catholic) (n=103) | 50 (48.5) | 53 (51.5) | |
| Jewish (n=67) | 35 (52.2) | 32 (47.8) | |
| Muslim (n=9) | 6 (66.7) | 3 (33.3) | |
| Other Non-Christian (n=42) | 20 (47.6) | 22 (52.4) | |
| Atheist/Agnostic (n=104) | 63 (60.6) | 41 (39.4) | |
| **Sexual Relationship Status** | | | 33.504*** |
| No current Sexual Relationship (n=106) | 36 (34) | 70 (66) | |
| One Casual Partner (n=69) | 31 (44.9) | 38 (55.1) | |
| One Serious Partner (Monogamous) (n=224) | 146 (65.2) | 78 (34.8) | |
| Multiple Partners (n=32) | 22 (68.8) | 10 (31.3) | |
| **First Generation College Student** | | | .653 |
| Yes (n=103) | 60 (58.3) | 43 (41.7) | |
| No (n=324) | 174 (53.7) | 150 (46.3) | |
| **Parents' Birthplace** | | | .422 |
| Both parents born in the U.S. (n=263) | 147 (55.9) | 116 (44.1) | |
| One or both parents born outside of the U.S. (n=167) | 88 (52.7) | 79 (47.3) | |
| **Single Parent Household (during HS)** | | | .001 |
| Yes (n=92) | 50 (54.3) | 42 (45.7) | |
| No (n=339) | 185 (54.6) | 154 (45.4) | |
| **Multi-Generational Household (during HS)** | | | .131 |
| Yes (n=33) | 17 (51.5) | 16 (48.5) | |
| No (n=398) | 218 (54.8) | 180 (45.2) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, ⁺p < 0.1*

Table 9.3. *Bivariate Associations of Covariates with Sexual Risk 3 (Pregnancy Prevention at Last Vaginal Sex)*

| | Pregnancy Prevention at Last Vaginal Sex | | |
|---|---|---|---|
| | No | Yes | $X^2$ |
| **Age** | | | AOR = .965 |
| **Gender** | | | 2.654 |
| Female (n=339) | 32 (9.4) | 307 (90.6) | |
| Male (n=91) | 14 (15.4) | 77 (84.6) | |
| **Race** | | | 15.211** |
| White (n=251) | 20 (8) | 231 (92) | |
| Black/African American (n=50) | 12 (24) | 38 (76) | |
| Hispanic/Latino (n=27) | 5 (18.5) | 22 (81.5) | |
| Asian (n=56) | 7 (12.5) | 49 (87.5) | |
| Other (Includes Multiple Races) (n=47) | 2 (4.3) | 45 (95.7) | |
| **Religion** | | | 4.679 |
| Roman Catholic (n=103) | 9 (8.7) | 94 (91.3) | |
| Christian (non-Catholic) (n=103) | 16 (15.5) | 87 (84.5) | |
| Jewish (n=67) | 6 (9.0) | 61 (91) | |
| Muslim (n=9) | 1 (11.1) | 8 (99.9) | |
| Other Non-Christian (n=42) | 6 (14.3) | 36 (85.7) | |
| Atheist/Agnostic (n=104) | 8 (7.7) | 96 (92.3) | |
| **Sexual Relationship Status** | | | 5.491 |
| No current Sexual Relationship (n=106) | 13 (12.3) | 93 (87.7) | |
| One Casual Partner (n=69) | 6 (8.7) | 63 (91.3) | |
| One Serious Partner (Monogamous) (n=224) | 20 (8.9) | 204 (91.1) | |
| Multiple Partners (n=32) | 7 (21.9) | 25 (78.1) | |
| **First Generation College Student** | | | 3.201[+] |
| Yes (n=103) | 16 (15.5) | 87 (84.5) | |
| No (n=324) | 30 (9.3) | 294 (90.7) | |
| **Parents' Birthplace** | | | 2.702 |
| Both parents born in the U.S. (n=263) | 23 (8.7) | 240 (91.3) | |
| One or both parents born outside of the U.S. (n=167) | 23 (13.8) | 144 (86.2) | |
| **Single Parent Household (during HS)** | | | .005 |
| Yes (n=92) | 10 (10.9) | 82 (89.1) | |
| No (n=339) | 36 (10.6) | 303 (89.4) | |
| **Multi-Generational Household (during HS)** | | | 2.114 |
| Yes (n=33) | 6 (18.2) | 27 (81.8) | |
| No (n=398) | 40 (10.1) | 358 (89.9) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, ⁺p < 0.1*

Table 9.4. *Bivariate Associations of Covariates with Sexual Risk 4 (Ever Had Unprotected Oral Sex)*

| | Ever Had Unprotected Oral Sex | | |
|---|---|---|---|
| | Yes | No | $X^2$ |
| **Age** | | | AOR = 1.131 |
| **Gender** | | | .024 |
| Female (n=363) | 349 (96.1) | 14 (3.9) | |
| Male (n=113) | 109 (96.5) | 4 (3.5) | |
| **Race** | | | 1.174 |
| White (n=275) | 266 (96.7) | 9 *3.3) | |
| Black/African American (n=60) | 57 (95) | 3 (5) | |
| Hispanic/Latino (n=30) | 28 (93.3) | 2 (6.7) | |
| Asian (n=61) | 59 (96.7) | 2 (3.3) | |
| Other (Includes Multiple Races) (n=52) | 50 (96.2) | 2 (3.8) | |
| **Religion** | | | 16.012** |
| Roman Catholic (n=114) | 112 (98.2) | 2 (1.8) | |
| Christian (non-Catholic) (n=108) | 104 (96.3) | 4 (3.7) | |
| Jewish (n=76) | 73 (96.1) | 3 (3.9) | |
| Muslim (n=13) | 10 (76.9) | 3 (23.1) | |
| Other Non-Christian (n=46) | 43 (93.5) | 3 (6.5) | |
| Atheist/Agnostic (n=118) | 115 (97.5) | 3 (2.5) | |
| **Sexual Relationship Status** | | | 9.251** |
| No current Sexual Relationship (n=135) | 125 (92.6) | 10 (7.4) | |
| One Casual Partner (n=72) | 72 (100) | - | |
| One Serious Partner (Monogamous) (n=235) | 227 (96.6) | 8 (3.4) | |
| Multiple Casual Partners (n=36) | 36 (100) | - | |
| **First Generation College Student** | | | .005 |
| Yes (n=108) | 104 (96.3) | 4 (3.7) | |
| No (n=363) | 349 (96.1) | 14 (3.9) | |
| **Parents' Birthplace** | | | 1.985 |
| Both parents born in the U.S. (n=288) | 280 (97.2) | 8 (2.8) | |
| One or both parents born outside of the U.S. (n=189) | 179 (94.7) | 10 (5.3) | |
| **Single Parent Household (during HS)** | | | .205 |
| Yes (n=100) | 97 (97.0) | 3 (3.0) | |
| No (n=378) | 363 (96.0) | 15 (4.0) | |
| **Multi-Generational Household (during HS)** | | | 1.942 |
| Yes (n=38) | 35 (92.1) | 3 (7.9) | |
| No (n=440) | 425 (96.6) | 15 (3.4) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, ⁺p < 0.1*

Table 9.5. *Bivariate Associations of Covariates with Sexual Risk 5 (Ever Had Unprotected Vaginal Sex)*

| | Ever Had Unprotected Vaginal Sex | | |
|---|---|---|---|
| | Yes | No | $X^2$ |
| **Age** | | | AOR = 1.362** |
| **Gender** | | | .074 |
| Female (n=341) | 391 (85.3) | 50 (14.7) | |
| Male (n=95) | 80 (84.2) | 15 (15.8) | |
| **Race** | | | 3.537 |
| White (n=255) | 219 (85.9) | 36 (14.1) | |
| Black/African American (n=50) | 40 (80) | 10 (20) | |
| Hispanic/Latino (n=27) | 24 (88.9) | 3 (11.1) | |
| Asian (n=56) | 44 (78.6) | 12 (21.4) | |
| Other (Includes Multiple Races) (n=50) | 44 (88) | 6 (12) | |
| **Religion** | | | 4.130 |
| Roman Catholic (n=106) | 90 (84.9) | 16 (15.1) | |
| Christian (non-Catholic) (n=103) | 83 (90.6) | 20 (19.4) | |
| Jewish (n=69) | 59 (85.5) | 10 (14.5) | |
| Muslim (n=9) | 7 (77.8) | 2 (22.2) | |
| Other Non-Christian (n=42) | 34 (81) | 8 (19) | |
| Atheist/Agnostic (n=106) | 95 (89.6) | 11 (10.4) | |
| **Sexual Relationship Status** | | | 26.844*** |
| No current Sexual Relationship (n=109) | 76 (69.7) | 33 (30.3) | |
| One Casual Partner (n=70) | 61 (87.1) | 9 (12.9) | |
| One Serious Partner (Monogamous) (n=226) | 202 (89.4) | 24 (10.6) | |
| Multiple Casual Partners (n=33) | 32 (97) | 1 (3) | |
| **First Generation College Student** | | | 2.476 |
| Yes (n=104) | 93 (89.4) | 11 (10.6) | |
| No (n=330) | 274 (83.0) | 56 (17.0) | |
| **Parents' Birthplace** | | | .324 |
| Both parents born in the U.S. (n=268) | 229 (85.4) | 39 (14.6) | |
| One or both parents born outside of the U.S. (n=169) | 141 (83.4) | 28 (16.6) | |
| **Single Parent Household (during HS)** | | | .592 |
| Yes (n=94) | 82 (87.2) | 12 (12.8) | |
| No (n=344) | 289 (84.0) | 55 (16.0) | |
| **Multi-Generational Household (during HS)** | | | .355 |
| Yes (n=34) | 30 (88.2) | 4 (11.8) | |
| No (n=404) | 341 (84.4) | 63 (15.6) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, ⁺p < 0.1*

Table 9.6. *Bivariate Associations of Covariates with Sexual Risk 6 (Ever Had Unprotected Anal Sex)*

| | Ever Had Unprotected Anal Sex | | |
|---|---|---|---|
| | Yes | No | $X^2$ |
| **Age** | | | AOR = 1.138 |
| **Gender** | | | .231 |
| Female (n=103) | 78 (75.7) | 25 (24.3) | |
| Male (n=39) | 28 (71.8) | 11 (28.2) | |
| **Race** | | | 2.424 |
| White (n=81) | 57 (70.4) | 24 (29.6) | |
| Black/African American (n=13) | 10 (76.9) | 3 (23.1) | |
| Hispanic/Latino (n=6) | 5 (83.3) | 1 (16.7) | |
| Asian (n=26) | 22 (84.6) | 4 (15.4) | |
| Other (Includes Multiple Races) (n=16) | 12 (75) | 4 (25) | |
| **Religion** | | | 3.506 |
| Roman Catholic (n=30) | 24 (80) | 6 (20) | |
| Christian (non-Catholic) (n=35) | 25 (71.4) | 10 (28.6) | |
| Jewish (n=15) | 13 (86.7) | 2 (13.3) | |
| Muslim (n=2) | 2 (100) | - | |
| Other Non-Christian (n=17) | 11 (64.7) | 6 (35.3) | |
| Atheist/Agnostic (n=43) | 31 (72.1) | 12 (27.9) | |
| **Sexual Relationship Status** | | | 9.744* |
| No current Sexual Relationship (n=27) | 17 (63) | 10 (37) | |
| One Casual Partner (n=20) | 12 (60) | 8 (40) | |
| One Serious Partner (Monogamous) (n=79) | 67 (84.8) | 12 (15.2) | |
| Multiple Casual Partners (n=16) | 10 (62.5) | 6 (37.5) | |
| **First Generation College Student** | | | 3.673[+] |
| Yes (n=42) | 27 (64.3) | 15 (35.7) | |
| No (n=98) | 78 (79.6) | 20 (20.4) | |
| **Parents' Birthplace** | | | 7.931** |
| Both parents born in the U.S. (n=82) | 54 (65.9) | 28 (34.1) | |
| One or both parents born outside of the U.S. (n=60) | 52 (86.7) | 8 (13.3) | |
| **Single Parent Household (during HS)** | | | .250 |
| Yes (n=36) | 28 (77.8) | 8 (22.2) | |
| No (n=106) | 78 (73.6) | 28 (26.4) | |
| **Multi-Generational Household (during HS)** | | | .034 |
| Yes (n=17) | 13 (76.5) | 4 (23.5) | |
| No (n=125) | 94 (74.4) | 32 (25.6) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

Table 9.7. *Bivariate Associations of Covariates with Sexual Risk 7 (HPV Vaccine Compliance)*

| | Received the HPV Vaccine | | | |
|---|---|---|---|---|
| | Yes | No | Not Sure / NA | $X^2$ |
| **Age** | | | | F=1.939* |
| **Gender** | | | | 40.608*** |
| Female (n=467) | 330 (70.7) | 86 (18.4) | 51 (10.9) | |
| Male (n=138) | 62 (44.9) | 33 (23.9) | 43 (31.2) | |
| **Race** | | | | 34.212*** |
| White (n=318) | 232 (73) | 49 (15.4) | 37 (11.6) | |
| Black/African American (n=93) | 50 (53.8) | 27 (29) | 16 (17.2) | |
| Hispanic/Latino (n=37) | 21 (56.8) | 6 (16.2) | 10 (27) | |
| Asian (n=93) | 45 (48.4) | 23 (24.7) | 25 (26.9) | |
| Other (Includes Multiple Races) (n=67) | 46 (68.7) | 15 (22.4) | 6 (9) | |
| **Religion** | | | | 36.515*** |
| Roman Catholic (n=136) | 93 (68.4) | 22 (16.2) | 21 (15.4) | |
| Christian (non-Catholic) (n=158) | 85 (53.8) | 49 (31) | 24 (15.2) | |
| Jewish (n=88) | 66 (75) | 12 (13.6) | 10 (11.4) | |
| Muslim (n=27) | 12 (44.4) | 12 (44.4) | 3 (11.1) | |
| Other Non-Christian (n=65) | 48 (73.8) | 6 (9.2) | 11 (16.9) | |
| Atheist/Agnostic (n=130) | 88 (67.7) | 18 (13.8) | 24 (18.5) | |
| **Sexual Relationship Status** | | | | 17.001** |
| No current Sexual Relationship (n=253) | 143 (56.5) | 64 (25.3) | 46 (18.2) | |
| One Casual Partner (n=74) | 48 (64.9) | 13 (17.6) | 13 (17.6) | |
| One Serious Partner (Monogamous) (n=244) | 180 (73.8) | 35 (14.3) | 29 (11.9) | |
| Multiple Casual Partners (n=37) | 23 (62.2) | 8 (21.6) | 6 (16.2) | |
| **First Generation College Student** | | | | 5.406+ |
| Yes (n=131) | 75 (57.3) | 34 (26.0) | 22 (16.8) | |
| No (n=467) | 315 (67.5) | 83 (17.8) | 69 (14.8) | |
| **Parents' Birthplace** | | | | 19.934*** |
| Both parents born in the U.S. (n=338) | 224 (72.2) | 57 (16.9) | 37 (10.9) | |
| One or both parents born outside of the U.S. (n=269) | 149 (55.4) | 63 (23.4) | 57 (21.2) | |
| **Single Parent Household (during HS)** | | | | |
| Yes (n=113) | 81 (71.7) | 16 (14.2) | 16 (14.2) | |
| No (n=495) | 313 (63.2) | 104 (21.0) | 78 (15.8) | |
| **Multi-Generational Household (during HS)** | | | | .351 |
| Yes (n=55) | 37 (67.3) | 11 (20.0) | 7 (12.7) | |
| No (n=553) | 357 (64.6) | 109 (19.7) | 87 (15.7) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, +p < 0.1*

## Appendix I: RQ1 - Bivariate Associations

Table 10.1. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Activity 1 (Multiple Lifetime Partners (Oral, Vaginal, or Anal))*

|  | Multiple Lifetime Partners | | |
|---|---|---|---|
|  | 3 or fewer partners | 4 or more partners | $X^2$ |
| **Family Religiosity (Frequency)** |  |  | .722 |
| Never/Infrequent (n=315) | 133 (42.2) | 182 (57.8) |  |
| Frequent (Monthly or more) (n=162) | 75 (46.3) | 87 (53.7) |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 10.2. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Activity 2 (Age at First Sex (Oral, Vaginal, or Anal))*

|  | Age at First Sex | | |
|---|---|---|---|
|  | 16 or younger | 17 or older | $X^2$ |
| Family Religiosity (Frequency) |  |  | .625 |
| Never/Infrequent (n=314) | 139 (44.3) | 175 (55.7) |  |
| Frequent (n=163) | 66 (40.5) | 97 (59.5) |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 10.3. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Activity 3 (Ever Had Oral Sex)*

|  | Ever Had Oral Sex | | |
|---|---|---|---|
|  | Yes | No | $X^2$ |
| Family Religiosity (Frequency) |  |  | 28.742*** |
| Never/Infrequent (n=356) | 308 (86.5) | 48 (13.5) |  |
| Frequent (n=229) | 156 (68.1) | 73 (31.9) |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 10.4. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Activity 4 (Ever Had Vaginal Sex)*

| | Ever Had Vaginal Sex | | |
| --- | --- | --- | --- |
| | Yes | No | $X^2$ |
| Family Religiosity (Frequency) | | | 25.757*** |
| Never/Infrequent (n=357) | 284 (79.6) | 73 (20.4) | |
| Frequent (n=229) | 138 (60.3) | 91 (39.7) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 10.5. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Activity 5 (Ever Had Anal Sex)*

| | Ever Had Anal Sex | | |
| --- | --- | --- | --- |
| | Yes | No | $X^2$ |
| Family Religiosity (Frequency) | | | 5.934* |
| Never/Infrequent (n=357) | 95 (26.6) | 262 (73.4) | |
| Frequent (n=229) | 41 (17.9) | 188 (82.1) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 10.6. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Activity 6 (Only Had Oral Sex)*

| | Only Had Oral Sex | | |
| --- | --- | --- | --- |
| | Yes | No | $X^2$ |
| Family Religiosity (Frequency) | | | 2.984[+] |
| Never/Infrequent (n=316) | 25 (7.9) | 291 (92.1) | |
| Frequent (n=164) | 21 (12.8) | 143 (87.2) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, [+]p < 0.1*

Table 11.1. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Risk 1 (Substance Use Before Last Sex)*

| | Substance Use Before Last Sex | | |
| --- | --- | --- | --- |
| | Yes | No | $X^2$ |
| Family Religiosity (Frequency) | | | 1.799 |
| Never/Infrequent (n=314) | 121 (38.5) | 193 (61.5) | |
| Frequent (n=164) | 53 (32.3) | 111 (67.7) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 11.2. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Risk 2 (Condom Use at Last Vaginal Sex)*

| | Condom Use at Last Vaginal Sex | | |
|---|---|---|---|
| | No | Yes | $X^2$ |
| Family Religiosity (Frequency) | | | 3.008 |
| Never/Infrequent (n=278) | 161 (57.9) | 117 (42.1) | |
| Frequent (n=137) | 67 (48.9) | 70 (51.1) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 11.3. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Risk 3 (Pregnancy Prevention at Last Vaginal Sex)*

| | Pregnancy Prevention at Last Vaginal Sex | | |
|---|---|---|---|
| | Any | None | $X^2$ |
| Family Religiosity (Frequency) | | | .565 |
| Never/Infrequent (n=278) | 31 (11.2) | 247 (88.8) | |
| Frequent (n=137) | 12 (8.8) | 125 (91.2 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 11.4. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Risk 4 (Ever Unprotected Oral Sex)*

| | Ever Had Unprotected Oral Sex | | |
|---|---|---|---|
| | Yes | No | $X^2$ |
| Family Religiosity (Frequency) | | | .233 |
| Never/Infrequent (n=308) | 297 (96.4) | 11 (3.6) | |
| Frequent (n=156) | 149 (95.5) | 7 (4.5) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 11.5. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Risk 5 (Ever Unprotected Vaginal Sex)*

| | Ever Had Unprotected Vaginal Sex | | |
|---|---|---|---|
| | Yes | No | $X^2$ |
| Family Religiosity (Frequency) | | | 4.490* |
| Never/Infrequent (n=284) | 247 (87) | 37 (13) | |
| Frequent (n=138) | 109 (79) | 29 (21) | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 11.6 *Bivariate Associations of Family Religiosity (Frequency) with Sexual Risk 6 (Ever Unprotected Anal Sex)*

|  | Ever Had Unprotected Anal Sex | | |
|---|---|---|---|
|  | Yes | No | $X^2$ |
| Family Religiosity (Frequency) |  |  | .056 |
| Never/Infrequent (n=95) | 70 (73.7) | 25 (26.3) |  |
| Frequent (n=41) | 31 (75.6) | 10 (24.4) |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 11.7. *Bivariate Associations of Family Religiosity (Frequency) with Sexual Risk 7 (Lack of HPV Vaccine Compliance)*

|  | Received the HPV Vaccine | | | |
|---|---|---|---|---|
|  | Yes | No | Not Sure | $X^2$ |
| Family Religiosity (Frequency) |  |  |  | 5.859* |
| Never/Infrequent (n=357) | 242 (67.8) | 57 (16) | 58 (16.2) |  |
| Frequent (n=229) | 141 (61.6) | 55 (24) | 33 (14.4) |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 12. *Comparison of Means for Parental Monitoring by Family Religiosity*

|  | Never/Infrequent Family Religiosity | | Frequent Family Religiosity | | |
|---|---|---|---|---|---|
|  | M | SD | M | SD | *t*-test |
| Parental Monitoring[a] | 22.18 | 6.680 | 24.98 | 6.484 | -4.317*** |

[a] Parental Monitoring Score range: 3 (min) to 36 (max)
*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 13.1. *Binary logistic regression predicting Sexual Activity 1 (Multiple Lifetime Partners (Oral, Vaginal, or Anal))*

|  | AOR | Wald ($z^2$) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .959** | 6.965 | [0.929, 0.989] |
| **Pseudo $R^2$** | .025 |  |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 13.2. *Binary logistic regression predicting Sexual Activity 2 (Age at First Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | 1.009 | .324 | [0.979, 1.039] |
| **Pseudo R²** | .001 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 13.3. *Binary logistic regression predicting Sexual Activity 3 (Ever Had Oral Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .993 | .150 | [0.959, 1.029] |
| **Pseudo R²** | .001 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 13.4. *Binary logistic regression predicting Sexual Activity 4 (Ever Had Vaginal Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .984 | 1.042 | [0.953, 1.015] |
| **Pseudo R²** | .003 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 13.5. *Binary logistic regression predicting Sexual Activity 5 (Ever Had Anal Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .950\*\* | 10.457 | [0.920, 0.980] |
| **Pseudo R²** | .034 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 13.6. *Binary logistic regression predicting Sexual Activity 6 (Only Had Oral Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | 1.029 | 10.457 | [0.920, 0.980] |
| Pseudo R² | .034 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 14.1. *Binary logistic regression predicting Sexual Risk 1 (Substance Use at Last Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .987 | .669 | [0.957, 1.018] |
| Pseudo R² | .002 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 14.2. *Binary logistic regression predicting Sexual Risk 2 (Condom Use at Last Vaginal Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | 1.049** | 7.812 | [1.014, 1.084] |
| Pseudo R² | .032 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 14.3. *Binary logistic regression predicting Sexual Risk 3 (Pregnancy Prevention at Last Vaginal Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | 1.075** | 7.976 | [1.023, 1.131] |
| Pseudo R² | .047 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 14.4. *Binary logistic regression predicting Sexual Risk 4 (Ever Had Unprotected Oral Sex)*

|  | AOR | Wald ($z^2$) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .995 | .011 | [0.910, 1.089] |
| **Pseudo R$^2$** | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 14.5. *Binary logistic regression predicting Sexual Risk 5 (Ever Had Unprotected Vaginal Sex)*

|  | AOR | Wald ($z^2$) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .921** | 9.467 | [0.874, 0.971] |
| **Pseudo R$^2$** | .055 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 14.6. *Binary logistic regression predicting Sexual Risk 6 (Ever Had Unprotected Anal Sex)*

|  | AOR | Wald ($z^2$) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | .993 | .042 | [0.928, 1.063] |
| **Pseudo R$^2$** | .001 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 14.7. *Binary logistic regression predicting Sexual Risk 7 (Receipt of the HPV Vaccine)*

|  | AOR | Wald ($z^2$) | 95% CI for AOR |
|---|---|---|---|
| Parental Monitoring | | | |
| No vs. Yes | 1.017 | .848 | [0.982, 1.053] |
| Not Sure vs. Yes | .987 | .394 | [0.949, 1.027] |
| **Pseudo R$^2$** | | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 15.1. *Comparison of Means for Student Sex Attitudes and Student Religiosity by Family Religiosity*

| | Family Religiosity | | | | | |
| | Never/Infrequent | | Frequent | | | |
| | M | SD | M | SD | *t*-test | *df* |
| Student Sex Attitudes – Total Score | 54.02 | 11.723 | 47.79 | 14.326 | 5.667*** | 567 |
| Student Religiosity – Overall Self-Ranking | 1.80 | 1.441 | 3.76 | 1.472 | -15.885 | 584 |
| Student Religiosity – Private Practice | 4.97 | 5.560 | 14.68 | 8.066 | -17.235*** | 583 |
| Student Religiosity – Forgiveness | 4.01 | 2.994 | 6.28 | 2.277 | -9.783*** | 579 |
| Student Religiosity – Organizational Religiousness | 1.55 | 1.920 | 4.55 | 2.824 | -15.309*** | 584 |
| Student Religiosity – Total Score | 12.36 | 9.983 | 29.25 | 12.490 | -18.010*** | 578 |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 15.2. *Comparison of Means for Family Sex Communication by Family Religiosity*

| | Family Religiosity | | | | | |
| | Never/Infrequent | | Frequent | | | |
| | M | SD | M | SD | *t*-test | *df* |
| Family Sex Communication | 5.09 | 2.452 | 5.66 | 2.495 | -2.739** | 584 |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

## Appendix J: RQ2 - Bivariate Associations

Table 16.1. *Binary logistic regression predicting Sexual Activity 1 (Multiple Lifetime Partners (Oral, Vaginal, or Anal))*

|  | AOR | Wald (z$^2$) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | 1.144** | 11.426 | [1.058, 1.237] |
| **Pseudo R$^2$** | .032 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 16.2. *Binary logistic regression predicting Sexual Activity 2 (Age at First Sex)*

|  | AOR | Wald (z$^2$) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | .901** | 7.007 | [0.835, 0.973] |
| **Pseudo R$^2$** | .019 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 16.3. *Binary logistic regression predicting Sexual Activity 3 (Ever Had Oral Sex)*

|  | AOR | Wald (z$^2$) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | 1.074* | 3.057 | [0.991, 1.165] |
| **Pseudo R$^2$** | .008 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 16.4. *Binary logistic regression predicting Sexual Activity 4 (Ever Had Vaginal Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | 1.072 | 3.487 | [0.997, 1.154] |
| **Pseudo R²** | .008 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 16.5. *Binary logistic regression predicting Sexual Activity 5 (Ever Had Anal Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | .966 | .801 | [0.894, 1.043] |
| **Pseudo R²** | .002 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 16.6. *Binary logistic regression predicting Sexual Activity 6 (Only Had Oral Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | .951 | .578 | [0.837, 1.082] |
| **Pseudo R²** | .003 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 17.1. *Binary logistic regression predicting Sexual Risk 1 (Substance Use at Last Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | 1.036 | .798 | [0.958, 1.121] |
| **Pseudo R²** | .002 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 17.2. *Binary logistic regression predicting Sexual Risk 2 (Condom Use at Last Vaginal Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | .986 | 0.122 | [0.909, 1.069] |
| **Pseudo R²** | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 17.3. *Binary logistic regression predicting Sexual Risk 3 (Pregnancy Prevention at Last Vaginal Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | .979 | 0.100 | [0.860, 1.115] |
| **Pseudo R²** | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 17.4 *Binary logistic regression predicting Sexual Risk 4 (Ever Had Unprotected Oral Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | .966 | .118 | [0.792, 1.178] |
| **Pseudo R²** | .001 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 17.5. *Binary logistic regression predicting Sexual Risk 5 (Ever Had Unprotected Vaginal Sex)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | 1.009 | 0.028 | [0.904, 1.127] |
| **Pseudo R²** | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 17.6 *Binary logistic regression predicting Sexual Risk 6 (Ever Had Unprotected Anal Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | .875 | 2.063 | [0.730, 1.050] |
| **Pseudo R$^2$** | 0.022 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 17.7. *Binary logistic regression predicting Sexual Risk 7 (Receipt of the HPV Vaccine)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Family Sex Communication | | | |
| No vs. Yes | .930 | 2.861 | [0.854, 1.012] |
| Not Sure vs. Yes | .786*** | 21.624 | [0.710, 0.870] |
| **Pseudo R$^2$** | 0.047 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 18. *Pearson's Product Moment Correlations for Family Sex Communication with Students' Sex Attitudes*

| | Family Sex Communication |
|---|---|
| Student Sex Attitudes – Total Score | -.002 |
| Student Sex Attitudes – Permissiveness | -.046 |
| Student Sex Attitudes – Birth Control | .033 |
| Student Sex Attitudes – Communion | .087* |
| Student Sex Attitudes – Instrumentality | -.009 |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 19.1. *Binary logistic regression predicting Sexual Activity 1 (Multiple Lifetime Partners (Oral, Vaginal, or Anal))*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | .967 | 2.017 | [0.924, 1.013] |
| Pseudo R² | .006 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 19.2. *Binary logistic regression predicting Sexual Activity 2 (Age at First Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | .999 | 0.004 | [0.954, 1.045] |
| Pseudo R² | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 19.3. *Binary logistic regression predicting Sexual Activity 3 (Ever Had Oral Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.071** | 8.271 | [1.022, 1.123] |
| Pseudo R² | .021 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 19.4. *Binary logistic regression predicting Sexual Activity 4 (Ever Had Vaginal Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.054* | 5.668 | [1.009, 1.100] |
| Pseudo R² | .013 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 19.5. *Binary logistic regression predicting Sexual Activity 5 (Ever Had Anal Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.009 | 0.153 | [0.963, 1.057] |
| Pseudo R² | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 19.6. *Binary logistic regression predicting Sexual Activity 6 (Only Had Oral Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.010 | 0.071 | [0.936, 1.091] |
| Pseudo R² | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 20.1. *Binary logistic regression predicting Sexual Risk 1 (Substance Use at Last Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 0.943* | 6.091 | [0.899, 0.988] |
| Pseudo R² | .017 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*


Table 20.2. *Binary logistic regression predicting Sexual Risk 2 (Condom Use at Last Vaginal Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.011 | 0.216 | [0.964, 1.061] |
| Pseudo R² | .001 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 20.3. *Binary logistic regression predicting Sexual Risk 3 (Pregnancy Prevention at Last Vaginal Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.048 | 1.508 | [0.972, 1.129] |
| **Pseudo $R^2$** | .007 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 20.4. *Binary logistic regression predicting Sexual Risk 4 (Ever Had Unprotected Oral Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 0.950 | 0.639 | [0.838, 1.077] |
| **Pseudo $R^2$** | .005 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 20.5. *Binary logistic regression predicting Sexual Risk 5 (Ever Had Unprotected Vaginal Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.018 | 0.292 | [0.954, 1.086] |
| **Pseudo $R^2$** | .001 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 20.6. *Binary logistic regression predicting Sexual Risk 6 (Ever Had Unprotected Anal Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion | 1.034 | 0.565 | [0.947, 1.129] |
| **Pseudo $R^2$** | .006 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 20.7. *Binary logistic regression predicting Sexual Risk 7 (Receipt of the HPV Vaccine)*

|  | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Communion |  |  |  |
| No vs. Yes | 0.926** | 9.146 | [0.881, 0.973] |
| Not Sure vs. Yes | 0.931* | 6.521 | [0.881, 0.983] |
| **Pseudo R²** | .025 |  |  |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

## Appendix K: RQ1 - Multivariate - Moderation

Table 21.1 *Multivariate logistic regression predicting Sexual Activity 1 (Multiple Lifetime Partners)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | *.020\*\*\** | *.020\*\*\** | *.027\*\*\** | *.026\*\*\** |
| One Casual Partner | *.108\** | *.107\** | .127 | *.126\** |
| One Serious Partner (Monogamous) | *.033\*\** | *.033\*\** | *.047\*\** | *.045\*\** |
| Multiple Partners | ref | ref | ref | Ref |
| **Parents' Birthplace** | .746 | .756 | .783 | .773 |
| **Family Religiosity (Frequency)** | | .870 | .940 | .919 |
| **Student Sex Attitudes – Total** | | | *1.033\*\*\** | 1.022 |
| **FamRel x Stud Sex Attitudes** | | | | 1.027 |
| **Pseudo R$^2$** | .170 | .171 | .207 | .212 |
| **Hosmer & Lemeshow** | $X^2 = 2.058$ | $X^2 = 5.008$ | $X^2 = 4.219$ | $X^2 = 4.968$ |
| | $p = .841$ | $p = .659$ | $p = .837$ | $p = .761$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 21.2. *Multivariate logistic regression predicting Sexual Activity 2 (Age at First Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | **AOR** | **AOR** | **AOR** | **AOR** |
| **Race** | | | | |
| White | ref | ref | ref | ref |
| (1) Black / African American | 1.021 | 1.000 | .921 | .922 |
| (2) Hispanic / Latino | .522 | .520 | .481 | .482 |
| (3) Asian | 1.390 | 1.384 | 1.357 | 1.358 |
| (4) Other (includes Multiple Races) | .632 | .630 | .641 | .641 |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | *2.247\** | *2.245\** | 1.929 | 1.928 |
| One Casual Partner | 1.014 | 1.013 | .926 | .926 |
| One Serious Partner (Monogamous) | 1.795 | 1.789 | 1.494 | 1.493 |
| Multiple Partners | ref | ref | ref | ref |
| **Parents' Birthplace** | 1.499 | 1.495 | 1.500 | 1.499 |
| **Single Parent Household (during H.S.)** | .660 | .664 | .688 | .688 |
| **Family Religiosity (Frequency)** | | 1.058 | 1.034 | 1.033 |
| **Student Sex Attitudes – Total** | | | .985 | .985 |
| **FamRel x Stud Sex Attitudes** | | | | 1.001 |
| **Pseudo R²** | .067 | .067 | .076 | .076 |
| **Hosmer & Lemeshow** | $X^2 = 5.468$ | $X^2 = 4.751$ | $X^2 = 8.711$ | $X^2 = 8.986$ |
| | $p = .707$ | $p = .690$ | $p = .367$ | $p = .343$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 21.3. *Multivariate logistic regression predicting Sexual Activity 3 (Ever Had Oral Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **Race** | | | | |
| White | ref | ref | ref | ref |
| (1) Black / African American | .834 | 1.087 | 1.401 | 1.411 |
| (2) Hispanic / Latino | .396 | .366 | .136 | .444 |
| (3) Asian | *.297** | *.341** | *.345** | *.352** |
| (4) Other (includes Multiple Races) | .663 | .699 | .619 | .612 |
| **Student Religion** | | | | |
| (1) Roman Catholic | .519 | .662 | .847 | .840 |
| (2) Christian (non-Catholic) | *.277*** | .419 | .559 | .552 |
| (3) Jewish | .740 | 1.032 | 1.188 | 1.191 |
| (4) Muslim | *.232** | .413 | .586 | .581 |
| (5) Other Non-Christian | .451 | .481 | .603 | .590 |
| (6) Atheist/Agnostic | ref | ref | ref | ref |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | .000 | .000 | .000 | .000 |
| One Casual Partner | .000 | .000 | .000 | .000 |
| One Serious Partner (Monogamous) | .000 | .000 | .000 | .000 |
| Multiple Partners | ref | ref | ref | ref |
| **Parents' Birthplace** | .898 | .932 | .874 | .858 |
| **Single Parent Household (during H.S.)** | *2.422** | 2.225 | 1.745 | 1.735 |
| **Family Religiosity (Frequency)** | | *.398*** | *.480** | *.505** |
| **Student Sex Attitudes - Total** | | | *1.047**** | *1.040** |
| **FamRel x Stud Sex Att Total** | | | | 1.012 |
| **Pseudo R²** | .491 | .509 | .542 | .543 |
| **Hosmer & Lemeshow** | $X^2 = 1.499$ | $X^2 = 4.971$ | $X^2 = 5.217$ | $X^2 = 4.242$ |
| | $p = .993$ | $p = .761$ | $p = .734$ | $p = .835$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 21.4. *Multivariate logistic regression predicting Sexual Activity 4 (Ever Had Vaginal Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | **AOR** | **AOR** | **AOR** | **AOR** |
| **Age** | 1.075 | 1.078 | 1.079 | 1.076 |
| **Race** | | | | |
| White | ref | ref | ref | ref |
| (1) Black / African American | *.426*  | .494 | .591 | .587 |
| (2) Hispanic / Latino | .283 | .287 | .317 | .331 |
| (3) Asian | *.324*  | *.355*  | *.341*  | *.353*  |
| (4) Other (includes Multiple Races) | .755 | .795 | .705 | .690 |
| **Student Religion** | | | | |
| (1) Roman Catholic | 1.015 | 1.189 | 1.465 | 1.443 |
| (2) Christian (non-Catholic) | .778 | 1.026 | 1.333 | 1.327 |
| (3) Jewish | 1.143 | 1.386 | 1.526 | 1.530 |
| (4) Muslim | .348 | .493 | .676 | .665 |
| (5) Other Non-Christian | .810 | .849 | 1.069 | 1.039 |
| (6) Atheist/Agnostic | ref | ref | ref | ref |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | *.074****  | *.076****  | *.128***  | *.124***  |
| One Casual Partner | 1.576 | 1.640 | 2.122 | 2.089 |
| One Serious Partner (Monogamous) | 1.545 | 1.628 | 1.772 | 2.651 |
| Multiple Partners | ref | ref | ref | ref |
| **First Generation College Student** | 1.828 | 1.678 | 1.901 | 1.839 |
| **Parents' Birthplace** | .971 | 1.007 | .978 | .945 |
| **Single Parent Household (during H.S.)** | *2.890***  | *2.758***  | *2.249*  | *2.239*  |
| **Family Religiosity (Frequency)** | | *.551*  | .656 | .703 |
| **Student Sex Attitudes – Total Score** | | | *1.047****  | *1.034*  |
| **FamRel x Stud Sex Att Total** | | | | 1.026 |
| **Pseudo R$^2$** | .480 | .488 | .523 | .526 |
| **Hosmer & Lemeshow** | $X^2 = 10.520$ *p* = .230 | $X^2 = 9.844$ *p* = .276 | $X^2 = 5.145$ *p* = .742 | $X^2 = 8.177$ *p* = .416 |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 21.5. *Multivariate logistic regression predicting Sexual Activity 5 (Ever Had Anal Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | **AOR** | **AOR** | **AOR** | **AOR** |
| **Age** | *1.236\*\*\** | *1.243\*\*\** | *1.267\*\*\** | *1.271\*\*\** |
| **Student Religion** | | | | |
| (1) Roman Catholic | .637 | .691 | .791 | .805 |
| (2) Christian (non-Catholic) | .636 | .737 | .896 | .894 |
| (3) Jewish | .491 | .531 | .543 | .532 |
| (4) Muslim | .260 | .320 | .443 | .449 |
| (5) Other Non-Christian | .906 | .948 | 1.138 | 1.115 |
| (6) Atheist/Agnostic | ref | ref | ref | ref |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | *.173\*\*\** | *.176\*\*\** | *.259\*\** | *.249\*\** |
| One Casual Partner | .480 | .472 | .564 | .552 |
| One Serious Partner (Monogamous) | .661 | .666 | .964 | .919 |
| Multiple Partners | ref | ref | ref | ref |
| **First Generation College Student** | 1.322 | 1.276 | 1.401 | 1.373 |
| **Single Parent Household (during H.S.)** | 1.254 | 1.229 | 1.102 | 1.107 |
| **Family Religiosity (Frequency)** | | .686 | .731 | .653 |
| **Student Sex Attitudes – Total Score** | | | *1.035\*\** | 1.022 |
| **FamRel x Stud Sex Att Total** | | | | 1.035 |
| **Pseudo R$^2$** | .179 | .185 | .214 | .221 |
| **Hosmer & Lemeshow** | $X^2 = 7.595$ | $X^2 = 5.448$ | $X^2 = 9.895$ | $X^2 = 6.382$ |
| | $p = .474$ | $p = .709$ | $p = .272$ | $p = .605$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.1. *Multivariate logistic regression predicting Sexual Risk 1 (Substance Use Before Last Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **Age** | 1.058 | 1.063 | 1.075 | 1.075 |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | *.426* | *.426* | .554 | .552 |
| One Casual Partner | .657 | .649 | .746 | .746 |
| One Serious Partner (Monogamous) | *.167\*\*\** | *.168\*\*\** | *.219\*\*\** | *.218\*\*\** |
| Multiple Partners | ref | ref | ref | ref |
| **First Generation College Student** | *.556\** | *.545\** | .600 | .599 |
| **Family Religiosity (Frequency)** | | .786 | .839 | .832 |
| **Student Sex Attitudes – Total Score** | | | *1.026\*\** | *1.025\** |
| **FamRel x Stud Sex Att Total** | | | | 1.003 |
| **Pseudo R$^2$** | .130 | .134 | .156 | .156 |
| **Hosmer & Lemeshow** | $X^2 = 6.667$ | $X^2 = 13.562$ | $X^2 = 14.134$ | $X^2 = 13.721$ |
| | $p = .464$ | $p = .094$ | $p = .078$ | $p = .089$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.2. *Multivariate logistic regression predicting Sexual Risk 2 (Condom Use at Last Vaginal Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | **AOR** | **AOR** | **AOR** | **AOR** |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | *4.266\*\** | *4.347\*\** | *3.985\*\** | *4.080\*\** |
| One Casual Partner | *2.700\** | 2.755 | *2.625\** | *2.661\** |
| One Serious Partner (Monogamous) | 1.043 | 1.030 | .934 | .949 |
| Multiple Partners | ref | ref | ref | ref |
| **Family Religiosity (Frequency)** | | 1.525 | 1.501 | 1.547 |
| **Student Sex Attitudes – Total Score** | | | .991 | .997 |
| **FamRel x Stud Sex Att** | | | | .987 |
| **Pseudo $R^2$** | .116 | .127 | .130 | .131 |
| **Hosmer & Lemeshow** | $X^2 = .000$ | $X^2 = 1.486$ | $X^2 = 5.801$ | $X^2 = 5.747$ |
| | $p = 1.000$ | $p = .960$ | $p = .670$ | $p = .676$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.3. *Multivariate logistic regression predicting Sexual Risk 3 (Pregnancy Prevention at Last Vaginal Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **Race** | | | | |
| White | ref | ref | ref | ref |
| (1) Black / African American | *.269** | *.227** | *.237** | *.237** |
| (2) Hispanic / Latino | .538 | .495 | .501 | .501 |
| (3) Asian | .771 | .723 | .726 | .726 |
| (4) Other (includes Multiple Races) | 2.018 | 1.948 | 1.914 | 1.915 |
| **Family Religiosity (Frequency)** | | 1.658 | 1.684 | 1.684 |
| **Student Sex Attitudes – Total Score** | | | 1.009 | 1.010 |
| **FamRel x Stud Sex Att** | | | | .999 |
| **Pseudo R$^2$** | .059 | .068 | .070 | .070 |
| **Hosmer & Lemeshow** | $X^2 = .000$ $p = 1.000$ | $X^2 = .331$ $p = .997$ | $X^2 = 11.568$ $p = .172$ | $X^2 = 11.544$ $p = .173$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.4. *Multivariate logistic regression predicting Sexual Risk 4 (Ever Had Unprotected Oral Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **Student Religion** | | | | |
| (1) Roman Catholic | 1.595 | 1.544 | 1.506 | 1.518 |
| (2) Christian (non-Catholic) | .804 | .747 | .669 | .692 |
| (3) Jewish | .800 | .784 | .780 | .776 |
| (4) Muslim | .179 | .164 | .150 | .147 |
| (5) Other Non-Christian | .457 | .443 | .428 | .425 |
| (6) Atheist/Agnostic | ref | ref | ref | ref |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | .000 | .000 | .000 | .000 |
| One Casual Partner | 1.040 | 1.049 | .987 | .978 |
| One Serious Partner (Monogamous) | .000 | .000 | .000 | .000 |
| Multiple Partners | ref | ref | ref | ref |
| **Family Religiosity (Frequency)** | | 1.172 | 1.171 | 1.169 |
| **Student Sex Attitudes – Total Score** | | | .991 | .987 |
| **FamRel x Stud Sex Att Total** | | | | 1.008 |
| **Pseudo $R^2$** | .136 | .137 | .138 | .138 |
| **Hosmer & Lemeshow** | $X^2 = 2.137$ | $X^2 = 5.354$ | $X^2 = 3.056$ | $X^2 = 3.946$ |
| | $p = .952$ | $p = .719$ | $p = .931$ | $p = .862$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.5. *Multivariate logistic regression predicting Sexual Risk 5 (Ever Had Unprotected Vaginal Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | **AOR** | **AOR** | **AOR** | **AOR** |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | *.069\** | *.065\*\** | *.061\*\** | *.060\*\** |
| One Casual Partner | .201 | .195 | .187 | .186 |
| One Serious Partner (Monogamous) | .295 | .301 | .278 | .275 |
| Multiple Partners | ref | ref | ref | ref |
| **Family Religiosity (Frequency)** | | *.489\** | *.482\** | *.473\** |
| **Student Sex Attitudes – Total Score** | | | .992 | .989 |
| **FamRel x Stud Sex Att Total** | | | | 1.007 |
| **Pseudo R$^2$** | .115 | .138 | .139 | .140 |
| **Hosmer & Lemeshow** | $X^2 = .000$ $p = 1.000$ | $X^2 = 1.529$ $p = .910$ | $X^2 = 3.906$ $p = .865$ | $X^2 = 3.892$ $p = .867$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.6. *Multivariate logistic regression predicting Sexual Risk 6 (Ever Had Unprotected Anal Sex)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **Sexual Relationship Status** | | | | |
| No current Sexual Relationship | .816 | .788 | .821 | .928 |
| One Casual Partner | .766 | .782 | .793 | .883 |
| One Serious Partner (Monogamous) | 3.232 | 3.279 | 3.407 | *3.994\** |
| Multiple Partners | ref | ref | ref | ref |
| **Parents' Birthplace** | *2.951\** | *2.887\** | *2.923\** | *3.239\** |
| **Family Religiosity (Frequency)** | | 1.325 | 1.320 | 2.043 |
| **Student Sex Attitudes – Total Score** | | | 1.005 | 1.024 |
| **FamRel x Stud Sex Att Total** | | | | .931 |
| **Pseudo R$^2$** | .174 | .177 | .178 | .203 |
| **Hosmer & Lemeshow** | $X^2 = 3.467$ $p = .628$ | $X^2 =$ $p =$ | $X^2 = 8.635$ $p = .374$ | $X^2 = 15.543$ $p = .049$ |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.7. *Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **No vs. Yes** | | | | |
| **Gender** | .426** | *.401*** | *.326**** | *.327**** |
| **Race** | | | | |
| White | ref | ref | ref | ref |
| (1) Black / African American | .802 | .680 | .623 | .622 |
| (2)Hispanic / Latino | 1.180 | 1.151 | 1.031 | 1.027 |
| (3) Asian | .907 | 1.064 | .904 | .898 |
| (4) Other | 1.714 | 1.679 | 1.371 | 1.347 |
| **Student Religion** | | | | |
| (1) Roman Catholic | 1.383 | 1.325 | 1.110 | 1.119 |
| (2) Christian (non-Catholic) | *2.943*** | *3.001*** | *2.301** | *2.307** |
| (3) Jewish | 1.144 | 1.112 | 1.028 | 1.030 |
| (4) Muslim | *3.427** | *3.398** | 2.624 | 2.648 |
| (5) Other Non-Christian | .463 | .456 | .385 | .391 |
| Atheist/Agnostic | ref | ref | ref | ref |
| **Status of Sexual Relationship** | | | | |
| (1) No current Sexual Relationship | 1.020 | 1.002 | .564 | .568 |
| (2) One Casual Partner | .860 | .823 | .673 | .677 |
| (3) One Serious Partner (Monogamous) | .562 | .557 | *.341** | *.347** |
| Multiple Partners | ref | ref | ref | ref |
| **Parents' Birthplace** | .803 | .973 | .977 | .969 |
| **IV: Family Religiosity** | | .996 | 1.149 | 1.183 |
| *MOD: Student Sex Attitudes Total Score* | | | *.961**** | *.964** |
| *Interaction: Stud Sex Att x Fam Rel* | | | | .993 |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 22.7. *(Cont.) Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | AOR | AOR | AOR | AOR |
| **Not Sure/NA vs. Yes** | | | | |
| **Gender** | *.215\*\*\** | *.213\*\*\** | *.194\*\*\** | *.194\*\*\** |
| **Race** | | | | |
| White | ref | ref | ref | ref |
| (1) Black / African American | 1.361 | 1.267 | 1.210 | 1.213 |
| (2)Hispanic / Latino | 2.392 | 2.708 | 2.183 | 2.188 |
| (3) Asian | 2.851 | 2.508 | 1.866 | 1.871 |
| (4) Other | *4.236\*\** | *4.608\*\** | *4.517\*\** | *4.584\*\** |
| **Student Religion** | | | | |
| (1) Roman Catholic | 1.060 | 1.135 | 1.036 | 1.035 |
| (2) Christian (non-Catholic) | 1.253 | 1.322 | 1.219 | 1.226 |
| (3) Jewish | .941 | 1.051 | .911 | .913 |
| (4) Muslim | .568 | .616 | .541 | .543 |
| (5) Other Non-Christian | .544 | .612 | .527 | .525 |
| Atheist/Agnostic | ref | ref | ref | ref |
| **Status of Sexual Relationship** | | | | |
| (1) No current Sexual Relationship | 1.323 | 1.324 | .841 | .836 |
| (2) One Casual Partner | 1.519 | 1.478 | 1.232 | 1.225 |
| (3) One Serious Partner (Monogamous) | .770 | .803 | .546 | .539 |
| Multiple Partners | ref | ref | ref | ref |
| **Parents' Birthplace** | .573 | .591 | .630 | .635 |
| **IV: Family Religiosity** | | 1.224 | 1.340 | 1.324 |
| *MOD: Student Sex Attitudes Total Score* | | | *.976\** | .973 |
| *Interaction: Stud Sex Att x Fam Rel* | | | | 1.006 |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

**Appendix L: RQ1 - Mediation**

Table 23.1. *Binary logistic regression predicting Sexual Activity 1 (Multiple Lifetime Partners (Oral, Vaginal, or Anal))*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | *1.047\*\*\** | 30.159 | [1.030, 1.065] |
| **Pseudo R$^2$** | .090 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 23.2. *Binary logistic regression predicting Sexual Activity 2 (Age at First Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | *.980\** | 6.372 | [0.965, 0.996] |
| **Pseudo R$^2$** | .018 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 23.3. *Binary logistic regression predicting Sexual Activity 3 (Ever Had Oral Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | *1.071\*\*\** | 59.445 | [1.053, 1.090] |
| **Pseudo R$^2$** | .177 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 23.4. *Binary logistic regression predicting Sexual Activity 4 (Ever Had Vaginal Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | *1.064*** | 58.520 | [1.047, 1.081] |
| Pseudo R² | .159 | | |

***p<0.001, **p<0.01, *p < 0.05*

Table 23.5. *Binary logistic regression predicting Sexual Activity 5 (Ever Had Anal Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | *1.037*** | 19.476 | [1.020, 1.053] |
| Pseudo R² | .053 | | |

***p<0.001, **p<0.01, *p < 0.05*

Table 23.6. *Binary logistic regression predicting Sexual Activity 6 (Only Had Oral Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | *.964** | | [0.941, 0.989] |
| Pseudo R² | .035 | | |

***p<0.001, **p<0.01, *p < 0.05*

Table 24.1. *Binary logistic regression predicting Sexual Risk 1 (Substance Use at Last Sex)*

| | AOR | Wald (z²) | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | *1.036*** | 17.337 | [1.019, 1.054] |
| Pseudo R² | .052 | | |

***p<0.001, **p<0.01, *p < 0.05*

Table 24.2. *Binary logistic regression predicting Sexual Risk 2 (Condom Use at Last Vaginal Sex)*

|  | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | .992 | .923 | [0.976, 1.008] |
| **Pseudo R$^2$** | .003 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 24.3. *Binary logistic regression predicting Sexual Risk 3 (Pregnancy Prevention at Last Vaginal Sex)*

|  | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | 1.019 | 1.929 | [0.992, 1.046] |
| **Pseudo R$^2$** | .009 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 24.4. *Binary logistic regression predicting Sexual Risk 4 (Ever Had Unprotected Oral Sex)*

|  | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | 1.008 | .142 | [0.968, 1.049] |
| **Pseudo R$^2$** | .001 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 24.5. *Binary logistic regression predicting Sexual Risk 5 (Ever Had Unprotected Vaginal Sex)*

|  | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | .996 | .116 | [0.974, 1.019] |
| **Pseudo R$^2$** | .000 | | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 24.6. *Binary logistic regression predicting Sexual Risk 6 (Ever Had Unprotected Anal Sex)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | .989 | .404 | [0.956, 1.023] |
| **Pseudo R²** | | .004 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 24.7. *Binary logistic regression predicting Sexual Risk 7 (Receipt of the HPV Vaccine)*

| | AOR | Wald $(z^2)$ | 95% CI for AOR |
|---|---|---|---|
| Student Sex Attitudes - Total Score | | | |
| No vs. Yes | *.961\*\*\** | 22.735 | [0.946, 0.977] |
| Not Sure vs. Yes | .987 | 1.986 | [0.970, 1.005] |
| **Pseudo R²** | | .048 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 25. *Multivariate logistic regression predicting Sexual Activity 3 (Ever Had Oral Sex)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **Race** | | | | | | |
| White | ref | | ref | | ref | |
| (1) Black / African American | .834 | [0.354, 1.967] | 1.087 | [0.444, 2.661] | 1.401 | [0.547, 3.588] |
| (2)Hispanic / Latino | .396 | [0.097, 1.613] | .366 | [0.089, 1.498] | .436 | [0.102, 1.861] |
| (3) Asian | *.297** | [0.111, 0.794] | *.341** | [0.125, 0.933] | *.345** | [0.123, 0.968] |
| (4) Other | .663 | [0.253, 1.738] | .699 | [0.262, 1.863] | .619 | [0.228, 1.678] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | .519 | [0.202, 1.334] | .662 | [0.252, 1.738] | .847 | [0.311, 2.305] |
| (2) Christian (non-Catholic) | *.277*** | [0.114, 0.671] | .419 | [0.165, 1.065] | .559 | [0.214, 1.459] |
| (3) Jewish | .740 | [0.259, 2.115] | 1.032 | [0.348, 3.060] | 1.188 | [0.386, 3.659] |
| (4) Muslim | *.232** | [0.066, 0.812] | .413 | [0.110, 1.547] | .586 | [0.150, 2.292] |
| (5) Other Non-Christian | .451 | [0.162, 1.257] | .481 | [0.172, 1.346] | .603 | [0.212, 1.716] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Sexual Relationship Status** | | | | | | |
| (1) No current Sexual Relationship | .000 | - | .000 | - | .000 | - |
| (2) One Casual Partner | .000 | - | .000 | - | .000 | - |
| (3) One Serious Partner (Monogamous) | .000 | - | .000 | - | .000 | - |
| Multiple Partners | ref | | ref | | ref | |
| **Parents' Birthplace** | .898 | [0.435, 1.852] | .932 | [0.445, 1.953] | .874 | [0.405, 1.882] |
| **Single Parent Household in HS** | 2.422* | [1.101, 5.331] | 2.225 | [0.991, 4.996] | 1.745 | [0.757, 4.023] |
| **IV: Family Religiosity** | | | *.398** | [0.219, 0.723] | *.480** | [0.258, 0.893] |
| **MED: Student Sex Attitudes – Total Score** | | | | | *1.047**** | [1.024, 1.071] |
| **Pseudo R²** | .491 | | .509 | | .542 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 26. *Multivariate logistic regression predicting Sexual Activity 4 (Ever Had Vaginal Sex)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | **AOR** | **95% CI** | **AOR** | **95% CI** | **AOR** | **95% CI** |
| **Age** | 1.075 | [0.935, 1.236] | 1.078 | [0.937, 1.241] | 1.079 | [0.937, 1.242] |
| **Race** | | | | | | |
| White | ref | | ref | | ref | |
| (1) Black / African American | *.426** | [0.187, 0.972] | .494 | [0.212, 1.155] | .591 | [0.244, 1.433] |
| (2)Hispanic / Latino | .283 | [0.079, 1.012] | .287 | [0.080, 1.026] | .317 | [0.088, 1.149] |
| (3) Asian | *.324** | [0.128, 0.818] | *.355** | [0.139, 0.908] | *.341** | [0.131, 0.891] |
| (4) Other | .755 | [0.300, 1.899] | .795 | [0.313, 2.019] | .705 | [0.274, 1.816] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | 1.015 | [0.466, 2.211] | 1.189 | [0.538, 2.627] | 1.465 | [0.645, 3.327] |
| (2) Christian (non-Catholic) | .778 | [0.364, 1.665] | 1.026 | [0.458, 2.301] | 1.333 | [0.577, 3.077] |
| (3) Jewish | 1.143 | [0.480, 2.720] | 1.386 | [0.569, 3.376] | 1.526 | [0.611, 3.808] |
| (4) Muslim | .348 | [0.101, 1.198] | .493 | [0.135, 1.804] | .676 | [0.179, 2.561] |
| (5) Other Non-Christian | .810 | [0.318, 2.060] | .849 | [0.333, 2.162] | 1.069 | [0.410, 2.786] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Sexual Relationship Status** | | | | | | |
| (1) No current Sexual Relationship | *.074*** | [0.021, 0.261] | *.076*** | [0.022, 0.268] | *.128*** | [0.035, 0.465] |
| (2) One Casual Partner | 1.576 | [0.320, 7.773] | 1.640 | [0.332, 8.107] | 2.122 | [0.418, 10.777] |
| (3) One Serious Partner (Monogamous) | 1.545 | [0.405, 5.901] | 1.628 | [0.426, 6.220] | 2.772 | [0.695, 11.050] |
| Multiple Partners | ref | | ref | | ref | |
| **First Generation College Student** | 1.828 | [0.917, 3.643] | 1.678 | [0.838, 3.361] | 1.901 | [0.939, 3.850] |
| **Parents' Birthplace** | .971 | [0.496, 1.903] | 1.007 | [0.510, 1.989] | .974 | [0.486, 1.970] |
| **Single Parent Household in HS** | *2.890*** | [1.366, 6.115] | *2.758*** | [1.293, 5.882] | *2.249** | [1.040, 4.864] |
| **IV: Family Religiosity** | | | *.551** | [0.320, 0.949] | .656+ | [0.372, 1.157] |
| **MED: Student Sex Attitudes – Total Score** | | | | | *1.047*** | [1.025, 1.070] |
| **Pseudo R²** | .480 | | .488 | | .523 | |

***p<0.001, **p<0.01, *p < 0.05, + < 0.1*

Table 27. *Multivariate logistic regression predicting Sexual Activity 5 (Ever Had Anal Sex)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | **AOR** | **95% CI** | **AOR** | **95% CI** | **AOR** | **95% CI** |
| **Age** | *1.236\*\*\** | [1.100, 1.390] | *1.243\*\*\** | [1.104, 1.399] | *1.267\*\*\** | [1.123, 1.429] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | .637 | [0.351, 1.154] | .691 | [0.377, 1.263] | .791 | [0.428, 1.463] |
| (2) Christian (non-Catholic) | .636 | [0.350, 1.156] | .737 | [0.394, 1.377] | .896 | [0.474, 1.694] |
| (3) Jewish | .491 | [0.238, 1.015] | .531 | [0.256, 1.102] | .543 | [0.259, 1.136] |
| (4) Muslim | .260 | [0.056, 1.217] | .320 | [0.066, 1.545] | .443 | [0.090, 2.184] |
| (5) Other Non-Christian | .906 | [0.422, 1.943] | .948 | [0.441, 2.040] | 1.138 | [0.523, 2.477] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Sexual Relationship Status** | | | | | | |
| (1) No current Sexual Relationship | *.173\*\*\** | [0.076, 0.395] | *.176\*\*\** | [0.077, 0.401] | *.259\*\** | [0.110, 0.606] |
| (2) One Casual Partner | .480 | [0.197, 1.169] | .472 | [0.193, 1.151] | .564 | [0.228, 1.394] |
| (3) One Serious Partner (Monogamous) | .661 | [0.312, 1.398] | .666 | [0.314, 1.413] | .964 | [0.439, 2.117] |
| Multiple Partners | ref | | ref | | ref | |
| **First Generation College Student** | 1.322 | [0.795, 2.197] | 1.276 | [0.765, 2.128] | 1.404 | [0.834, 2.355] |
| **Single Parent Household in HS** | 1.254 | [0.735, 2.140] | 1.229 | [0.719, 2.101] | 1.102 | [0.639, 1.901] |
| **IV: Family Religiosity** | | | .686 | [0.424, 1.110] | .731 | [0.450, 1.189] |
| **MED: Student Sex Attitudes – Total Score** | | | | | *1.035\*\*\** | [1.015, 1.056] |
| **Pseudo R²** | .179 | | .185 | | .214 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 28. *Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **Yes vs. No** | | | | | | |
| **Gender (Male)** | .426** | [0.252, 0.719] | .401** | [0.235, 0.685] | .326*** | [0.187, 0.569] |
| **Race** | | | | | | |
| White | ref | | ref | | ref | |
| (1) Black / African American | .680 | [0.339, 1.364] | .591 | [0.284, 1.231] | .604 | [0.283, 1.285] |
| (2) Hispanic / Latino | .884 | [0.295, 2.649] | .639 | [0.209, 1.961] | .689 | [0.216, 2.195] |
| (3) Asian | .468 | [0.205, 1.066] | .405* | [0.170, 0.965] | .454 | [0.183, 1.130] |
| (4) Other | .802 | [0.371, 1.734] | .680 | [0.311, 1.488] | .623 | [0.280, 1.386] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | .723 | [0.351, 1.488] | .755 | [0.355, 1.606] | .901 | [0.414, 1.961] |
| (2) Christian (non-Catholic) | .340** | [0.171, 0.673] | .333** | [0.161, 0.690] | .435* | [0.205, 0.922] |
| (3) Jewish | .874 | [0.372, 2.050] | .899 | [0.368, 2.195] | .973 | [0.394, 2.399] |
| (4) Muslim | .292* | [0.103, 0.823] | .294* | [0.097, 0.891] | .381 | [0.121, 1.197] |
| (5) Other Non-Christian | 2.159 | [0.761, 6.124] | 2.192 | [0.719, 6.682] | 2.595 | [0.830, 8.119] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Status of Sexual Relationship** | | | | | | |
| (1) No current Sexual Relationship | .981 | [0.390, 2.467] | .998 | [0.393, 2.534] | 1.775 | [0.659, 4.776] |
| (2) One Casual Partner | 1.163 | [0.392, 3.454] | 1.216 | [0.403, 3.676] | 1.486 | [0.482, 4.582] |
| (3) One Serious Partner (Monogamous) | 1.780 | [0.693, 4.570] | 1.794 | [0.694, 4.637] | 2.937 | [1.085, 7.947] |
| Multiple Partners | ref | | ref | | ref | |
| **Parents' Birthplace** | 1.246 | [0.698, 2.223] | 1.028 | [0.561, 1.885] | 1.023 | [0.550, 1.904] |
| **IV: Family Religiosity** | | | .996 | [0.600, 1.653] | 1.149 | [0.677, 1.952] |
| **MED: Student Sex Attitudes Total Score** | | | | | 1.041*** | [1.020, 1.062] |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 28.(Cont.) *Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **Not Sure/NA vs. No** | | | | | | |
| **Gender (Male)** | *1.976\** | *[1.077, 3.626]* | 1.885\* | [1.013, 3.507] | 1.680 | [0.879, 3.213] |
| **Race** | | | | | | |
| White | ref | | ref | | ref | |
| (1) Black / African American | 1.194 | [0.463, 3.050] | 1.262 | [0.477, 3.341] | 1.089 | [0.405, 2.927] |
| (2)Hispanic / Latino | 1.852 | [0.511, 6.709] | 1.265 | [0.329, 4.860] | 1.062 | [0.255, 4.424] |
| (3) Asian | 1.456 | [0.535, 3.966] | 1.473 | [0.519, 4.182] | 1.695 | [0.582, 4.939] |
| (4) Other | .589 | [0.186, 1.871] | .537 | [0.167, 1.729] | .514 | [0.159, 1.664] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | .766 | [0.314, 1.868] | .857 | [0.336, 2.185] | .933 | [0.358, 2.434] |
| (2) Christian (non-Catholic) | .426 | [0.180, 1.008] | .441 | [0.175, 1.110] | .530 | [0.206, 1.362] |
| (3) Jewish | .822 | [0.269, 2.513] | .945 | [0.297, 3.011] | .886 | [0.271, 2.892] |
| (4) Muslim | *.166\** | *[0.038, 0.726]* | *.181\** | *[0.038, 0.861]* | *.206\** | *[0.042, 1.003]* |
| (5) Other Non-Christian | 1.176 | [0.349, 3.962] | 1.341 | [0.374, 4.807] | 1.368 | [0.370, 5.051] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Status of Sexual Relationship** | | | | | | |
| (1) No current Sexual Relationship | 1.297 | [0.401, 4.196] | 1.322 | [0.404, 4.321] | 1.493 | [0.434, 5.142] |
| (2) One Casual Partner | 1.767 | [0.450, 6.935] | 1.796 | [0.448, 7.206] | 1.830 | [0.454, 7.376] |
| (3) One Serious Partner (Monogamous) | 1.370 | [0.406, 4.628] | 1.442 | [0.424, 4.901] | 1.605 | [0.455, 5.663] |
| Multiple Partners | ref | | ref | | ref | |
| **Parents' Birthplace** | .334 | [0.334, 1.523] | .608 | [0.277, 1.333] | .645 | [0.291, 1.430] |
| **IV: Family Religiosity** | | | .813 | [0.419, 1.579] | .858 | [0.430, 1.711] |
| **MED: Student Sex Attitudes Total Score** | | | | | 1.016 | [0.990, 1.042] |
| **Pseudo R$^2$** | .206 | | .212 | | .240 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 29. *Multivariate logistic regression predicting Sexual Risk 5 (Ever Had Unprotected Vaginal Sex)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | **AOR** | **95% CI** | **AOR** | **95% CI** | **AOR** | **95% CI** |
| **Sexual Relationship Status** | | | | | | |
| (1) No current Sexual Relationship | *.089\** | *[0.011, 0.697]* | *.087\** | *[0.011, 0.687]* | *.097\** | *[0.012, 0.783]* |
| (2) One Casual Partner | .245 | [0.029, 2.095] | .238 | [0.028, 2.051] | .315 | [0.035, 2.811] |
| (3) One Serious Partner (Monogamous) | .376 | [0.048, 2.963] | .393 | [0.050, 3.106] | .464 | [0.057, 3.772] |
| Multiple Partners | ref | | ref | | ref | |
| **IV: Family Religiosity (Frequency)** | | | *.506\** | *[0.258, 0.993]* | .611+ | [0.304, 1.226] |
| **MED: Parental Monitoring – Total Score** | | | | | *.921\*\** | [0.870, 0.975] |
| **Pseudo R²** | .103 | | .122 | | .167 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05, ⁺p < 0.1*

**Appendix M: RQ2 - Mediation**

Table 30. *Multivariate logistic regression predicting Sexual Activity 4 (Ever Had Vaginal Sex)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **Age** | 1.112 | [0.967, 1.278] | 1.112 | [0.967, 1.278] | 1.108 | [0.963, 1.275] |
| **Race** | | | | | | |
| White | ref | | ref | | ref | |
| (1) Black / African American | .474 | [0.216, 1.038] | .473 | [0.215, 1.038] | .477 | [0.217, 1.048] |
| (2) Hispanic / Latino | .475 | [0.141, 1.604] | .474 | [0.140, 1.607] | .485 | [0.143, 1.651] |
| (3) Asian | .443 | [0.185, 1.064] | .444 | [0.185, 1.066] | .447 | [0.186, 1.076] |
| (4) Other | .859 | [0.346, 2.137] | .858 | [0.344, 2.137] | .851 | [0.342, 2.117] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | .975 | [0.457, 2.082] | .974 | [0.456, 2.082] | .956 | [0.445, 2.051] |
| (2) Christian (non-Catholic) | .747 | [0.355, 1.572] | .746 | [0.354, 1.572] | .745 | [0.354, 1.569] |
| (3) Jewish | 1.107 | [0.470, 2.606] | 1.106 | [0.469, 2.606] | 1.106 | [0.469, 2.608] |
| (4) Muslim | .241* | [0.072, 0.806] | .241* | [0.072, 0.807] | .242* | [0.072, 0.808] |
| (5) Other Non-Christian | .704 | [0.289, 1.714] | .703 | [0.288, 1.714] | .698 | [0.286, 1.704] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Sexual Relationship Status** | | | | | | |
| (1) No current Sexual Relationship | .083*** | [0.024, 0.289] | .083*** | [0.024, 0.291] | .083*** | [0.024, 0.289] |
| (2) One Casual Partner | 1.675 | [0.341, 8.230] | 1.676 | [0.341, 8.242] | 1.668 | [0.339, 8.210] |
| (3) One Serious Partner (Monogamous) | 1.547 | [0.411, 5.829] | 1.549 | [0.411, 5.838] | 1.511 | [0.399, 5.719] |
| Multiple Partners | ref | | ref | | ref | |
| **First Generation College Student** | 1.946* | [1.009, 3.753] | 1.949* | [1.007, 3.771] | 1.937* | [1.001, 3.749] |
| **Parents' Birthplace** | .822 | [0.432, 1.565] | .823 | [0.432, 1.568] | .812 | [0.425, 1.551] |
| **Single Parent Household in HS** | 3.112** | [1.499, 6.463] | 3.108** | [1.494, 6.465] | 3.115** | [1.496, 6.484] |
| **IV: Total Family Sex Ed & Comm (continuous)** | | | 1.003 | | 1.000 | [0.909, 1.100] |
| **MED: Student Sex Attitudes – Communion Score** | | | | | 1.014 | [0.958, 1.072] |
| **Pseudo R²** | .478 | | .478 | | .478 | |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 31.1. *Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **Yes vs. No** | | | | | | |
| **Gender (Male)** | *.426** | *[0.252, 0.719]* | *.447** | [0.262, 0.783] | *.415** | *[0.242, 0.713]* |
| **Race** | | | | | | |
| White | ref | | ref | | ref | |
| (1) Black / African American | 1.246 | [0.577, 2.694] | 1.280 | [0.591, 2.772] | 1.276 | [0.588, 2.270] |
| (2)Hispanic / Latino | .847 | [0.378, 1.899] | .834 | [0.371, 1.872] | .811 | [0.358, 1.836] |
| (3) Asian | 1.102 | [0.352, 3.454] | 1.080 | [0.344, 3.396] | 1.160 | [0.365, 3.682] |
| (4) Other | .583 | [0.245, 1.389] | .607 | [0.254, 1.452] | .639 | [0.264, 1.547] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | .723 | [0.351, 1.488] | .716 | [0.347, 1.474] | .637 | [0.306, 1.323] |
| (2) Christian (non-Catholic) | *.340** | *[0.171, 0.673]* | *.336** | *[0.169, 0.666]* | *.329** | *[0.165, 0.658]* |
| (3) Jewish | .874 | [0.372, 2.050] | .873 | [0.372, 2.049] | .838 | [0.354, 1.984] |
| (4) Muslim | *.292* | *[0.103, 0.823]* | *.300* | *[0.106, 0.847]* | *.286* | *[0.100, 0.815]* |
| (5) Other Non-Christian | .463 | [0.761, 6.124] | 2.144 | [0.756, 6.079] | 1.950 | [0.683, 5.570] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Status of Sexual Relationship** | | | | | | |
| (1) No current Sexual Relationship | .981 | [0.390, 2.467] | 1.005 | [0.397, 2.543] | .962 | [0.378, 2.449] |
| (2) One Casual Partner | 1.163 | [0.392, 3.454] | 1.170 | [0.394, 3.477] | 1.071 | [0.357, 3.208] |
| (3) One Serious Partner (Monogamous) | 1.780 | [0.693, 4.570] | 1.806 | [0.702, 4.649] | 1.611 | [0.619, 4.195] |
| Multiple Partners | ref | | ref | | ref | |
| **Parents' Birthplace** | 1.246 | [0.698, 2.223] | | [0.680, 2.171] | | [0.709, 2.294] |
| **IV: Total Family Sex Ed + Comm** | | | 1.036 | [0.945, 1.137] | 1.024 | [0.933, 1.124] |
| ***MED: Student Sex Attitudes Communion Score*** | | | | | *1.078** | *[1.021, 1.138]* |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 31. (Cont.) *Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **Not Sure/NA vs. No** | | | | | | |
| **Gender (Male)** | *1.976\** | *[1.077, 3.626]* | 1.726 | [0.923, 3.227] | 1.740 | [0.926, 3.272] |
| **Race** | | | | | | |
| White | ref | | ref | | ref | |
| (1) Black / African American | 1.697 | [0.534, 5.387] | 1.694 | [0.527, 5.442] | 1.722 | [0.538, 5.506] |
| (2)Hispanic / Latino | 2.027 | [0.625, 6.575] | 2.020 | [0.619, 6.586] | 2.040 | [0.622, 6.692] |
| (3) Asian | 3.142 | [0.740, 13.334] | 3.241 | [0.755, 13.913] | 3.076 | [0.702, 13.483] |
| (4)Other | 2.471 | [0.768, 7.949] | 2.199 | [0.676, 7.155] | 2.344 | [0.717, 7.667] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | .766 | [0.314, 1.868] | .758 | [0.309, 1.858] | .781 | [0.316, 1.936] |
| (2) Christian (non-Catholic) | .426 | [0.180, 1.008] | .446 | [0.187, 1.059] | .447 | [0.187, 1.064] |
| (3) Jewish | .822 | [0.269, 2.513] | .809 | [0.264, 2.482] | .752 | [0.240, 2.362] |
| (4) Muslim | *.166\** | *[0.038, 0.726]* | *.168\** | *[0.038, 0.735]* | *.163\** | *[0.037, 0.716]* |
| (5) Other Non-Christian | 1.176 | [0.349, 3.962] | 1.252 | [0.370, 4.236] | 1.114 | [0.324, 3.829] |
| Atheist/Agnostic | ref | | ref | | ref | |
| **Status of Sexual Relationship** | | | | | | |
| (1) No current Sexual Relationship | 1.297 | [0.401, 4.196] | 1.114 | [0.340, 3.650] | 1.093 | [0.333, 3.581] |
| (2) One Casual Partner | 1.767 | [0.450, 6.935] | 1.651 | [0.417, 6.527] | 1.622 | [0.409, 6.435] |
| (3) One Serious Partner (Monogamous) | 1.370 | [0.406, 4.628] | 1.261 | [0.371, 4.284] | 1.202 | [0.350, 4.122] |
| Multiple Partners | ref | | ref | | ref | |
| **Parents' Birthplace** | .713 | [0.334, 1.523] | .712 | [0.329, 1.541] | .711 | [0.329, 1.537] |
| **IV: Total Family Sex Ed + Comm** | | | .888 | [0.785, 1.006] | .893 | [0.789, 1.011] |
| *MED: Student Sex Attitudes Communion Score* | | | | | .989 | [0.924, 1.059] |

*\*\*\*p<0.001, \*\*p<0.01, \*p < 0.05*

Table 31.2. *Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **No vs. Yes** | | | | | | |
| **Gender (Male)** | 2.349** | [1.392, 3.965] | 2.238** | [1.311, 3.821] | 2.408** | [1.403, 4.135] |
| **Race** | | | | | | |
| White | ref | ref | ref | ref | ref | ref |
| (1) Black / African American | 1.471 | [0.733, 2.951] | 1.535 | [0.765, 3.083] | 1.573 | [0.777, 3.183] |
| (2) Hispanic / Latino | 1.131 | [0.377, 3.389] | 1.185 | [0.394, 3.565] | 1.100 | [0.361, 3.353] |
| (3) Asian | 2.137 | [0.938, 4.868] | 2.108 | [0.925, 4.805] | 1.997 | [0.865, 4.613] |
| (4) Other | 1.246 | [0.577, 2.694] | 1.280 | [0.591, 2.773] | 1.276 | [0.588, 2.770] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | 1.383 | [0.672, 2.846] | 1.397 | [0.678, 2.878] | 1.570 | [0.756, 3.264] |
| (2) Christian (non-Catholic) | 2.943** | [1.485. 5.832] | 2.978** | [1.502, 5.906] | 3.039** | [1.520, 6.077] |
| (3) Jewish | 1.144 | [0.488, 2.685] | 1.146 | .488, 2.690] | 1.193 | [0.504, 2.824] |
| (4) Muslim | 3.427* | [1.214, 9.671] | 3.332* | 1.181, 9.403] | 3.498* | [1.226, 9.980] |
| (5) Other Non-Christian | .463 | [0.163, 1.313] | .467 | [0.165, 1.323] | .513 | [0.180, 1.465] |
| Atheist/Agnostic | ref | ref | ref | ref | ref | ref |
| **Status of Sexual Relationship** | | | | | | |
| (1) No current Sexual Relationship | 1.020 | [0.405, 2.566] | .995 | [0.393, 2.516] | 1.040 | [0.408, 2.648] |
| (2) One Casual Partner | .860 | [0.289, 2.552] | .855 | [0.288, 2.540] | .934 | [0.312, 2.798] |
| (3) One Serious Partner (Monogamous) | .562 | [0.219, 1.442] | .554 | [0.215, 1.425] | .621 | [0.238, 1.616] |
| Multiple Partners | ref | ref | ref | ref | ref | ref |
| **Parents' Birthplace** | .803 | [0.450, 1.433] | .823 | [0.461, 1.471] | .784 | [0.436, 1.410 |
| **IV: Total Family Sex Ed + Comm** | | | .965 | [0.880, 1.058] | .977 | [0.890, 1.072] |
| **MED: Student Sex Attitudes Communion Score** | | | | | .928** | [0.879, 0.979] |

***p<0.001, **p<0.01, *p < 0.05

Table 31.2 (Cont.) *Multivariate Logistic Regression Predicting Sexual Risk 7 (HPV Vaccine Compliance)*

| Model | 1 | | 2 | | 3 | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| **Not Sure/NA vs. Yes** | | | | | | |
| **Gender (Male)** | 4.642*** | [2.738, 7.871] | 3.862*** | [2.240, 6.658] | 4.191*** | [2.403, 7.308] |
| **Race** | | | | | | |
| White | ref | ref | ref | ref | ref | ref |
| (1) Black / African American | 1.757 | [0.755, 4.086] | 1.830 | [0.775, 4.321] | 1.863 | [0.785, 4.422] |
| (2) Hispanic / Latino | 2.094 | [0.751, 5.839] | 2.267 | [0.793, 6.477] | 1.966 | [0.668, 5.788] |
| (3) Asian | 3.112* | [1.298, 7.462] | 2.736* | [1.120, 6.684] | 2.720* | [1.104, 6.699] |
| (4) Other | .735 | [0.260, 2.076] | .755 | [0.263, 2.174] | .741 | [0.257, 2.140] |
| **Student Religion** | | | | | | |
| (1) Roman Catholic | 1.060 | [0.515, 2.182] | 1.059 | [0.510, 2.201] | 1.227 | [0.585, 2.576] |
| (2) Christian (non-Catholic) | 1.253 | [0.595, 2.637] | 1.327 | [0.627, 2.810] | 1.357 | [0.636, 2.897] |
| (3) Jewish | .941 | [0.382, 2.318] | .927 | [0.374, 2.298] | .898 | [0.351, 2.294] |
| (4) Muslim | .568 | [0.134, 2.416] | .560 | [0.133, 2.363] | .570 | [0.134, 2.435] |
| (5) Other Non-Christian | .544 | [0.223, 1.330] | .584 | [0.238, 1.435] | .571 | [0.226, 1.445] |
| Atheist/Agnostic | ref | ref | ref | ref | ref | ref |
| **Status of Sexual Relationship** | | | | | | |
| (1) No current Sexual Relationship | 1.323 | [0.464, 3.772] | 1.108 | [0.383, 3.206] | 1.136 | [0.392, 3.296] |
| (2) One Casual Partner | 1.519 | [0.464, 4.969] | 1.411 | [0.427, 4.661] | 1.514 | [0.455, 5.041] |
| (3) One Serious Partner (Monogamous) | .770 | [0.264, 2.245] | .698 | [0.237, 2.052] | .746 | [0.251, 2.215] |
| Multiple Partners | ref | ref | ref | ref | ref | ref |
| **Parents' Birthplace** | .573 | [0.296, 1.109] | .586 | [0.298, 1.152] | .557 | [0.282, 1.102] |
| **IV: Total Family Sex Ed + Comm** | | | .857** | [0.769, 0.956] | .872* | [0.781, 0.973] |
| **MED: Student Sex Attitudes Communion Score** | | | | | .917** | [0.863, 0.975] |

***p<0.001, **p<0.01, *p < 0.05
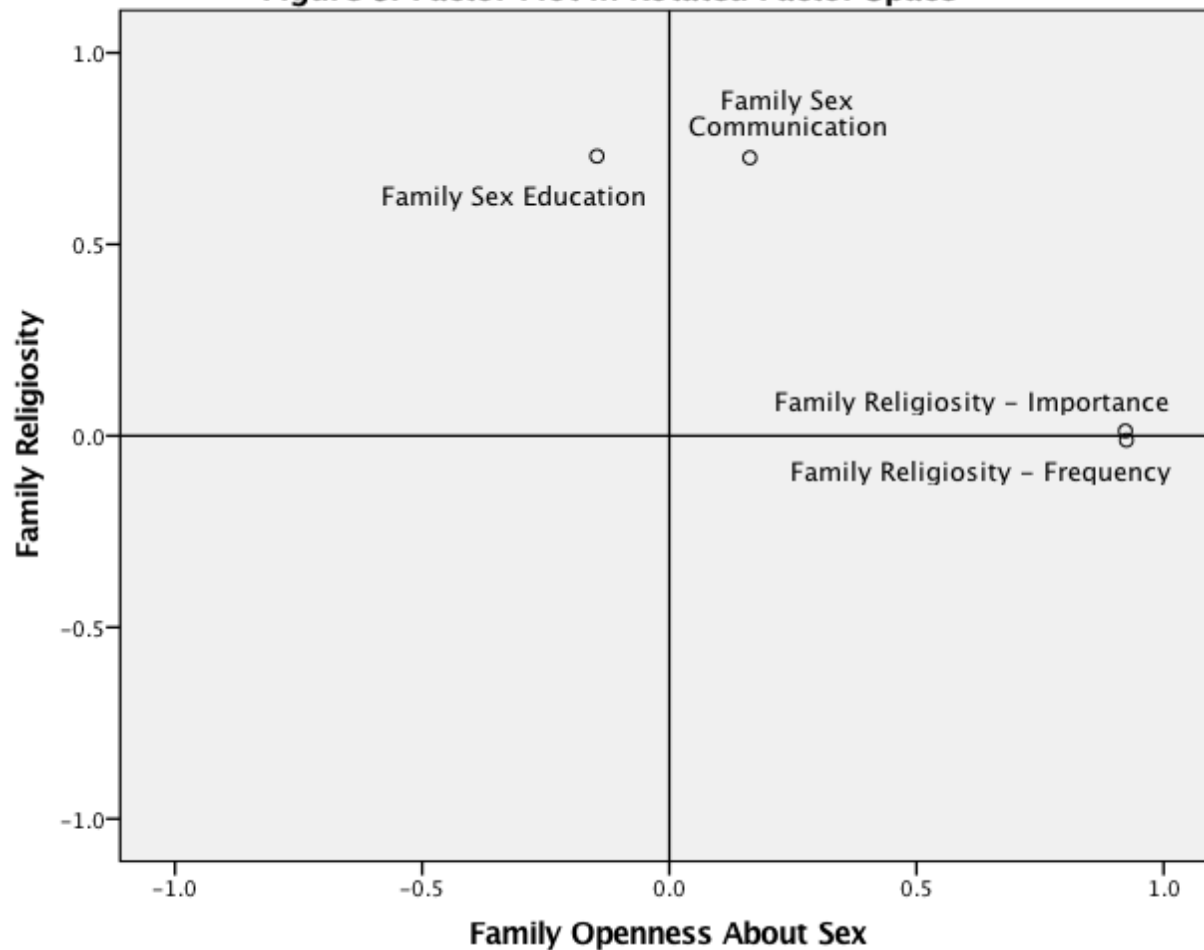
**Appendix N: RQ3 - Exploratory Factor Analysis**

Table 32. *Factor loadings and communalities based on principal axis factoring with oblimin rotation for family religiosity and family openness about sex*

|  | Family Religiosity | Family Openness About Sex | *Communality** |
|---|---|---|---|
| Family Religiosity - Frequency | **.92** | .055 | .85 |
| Family Religiosity - Importance | **.92** | .030 | .85 |
| Family Sex Education | -.113 | **.723** | .55 |
| Family Sex Communication | .196 | **.733** | .56 |

*Communality = the proportion of each variable's variance that is explained by the factor

Note: Loadings highlighted in bold indicate the factor on which the item was placed.



Figure 5. Factor Plot in Rotated Factor Space

Table 33. *Factor loadings and communalities based on principal axis factoring with oblimin rotation for students' religiosity and students' sex attitudes.*

|  | Student Religiosity | Student Openness About Sex | *Communality** |
|---|---|---|---|
| Student Religiosity – Overall Self-Rank | **.89** | -.41 | .80 |
| Student Religiosity – Private Practice | **.91** | -.56 | .85 |
| Student Religiosity – Forgiveness | **.66** | -.27 | .44 |
| Student Religiosity – Organizational Religiousness | **.76** | -.51 | .60 |
| Student Sex Attitudes – Permissiveness | -.52 | **.74** | .58 |
| Student Sex Attitudes – Birth Control | -.16 | **.32** | .10 |
| Student Sex Attitudes - Instrumentality | -.21 | **.49** | .24 |

*Communality = the proportion of each variable's variance that is explained by the factor

Note: Loadings highlighted in bold indicate the factor on which the item was placed.



Figure 6. Factor Plot in Rotated Factor Space
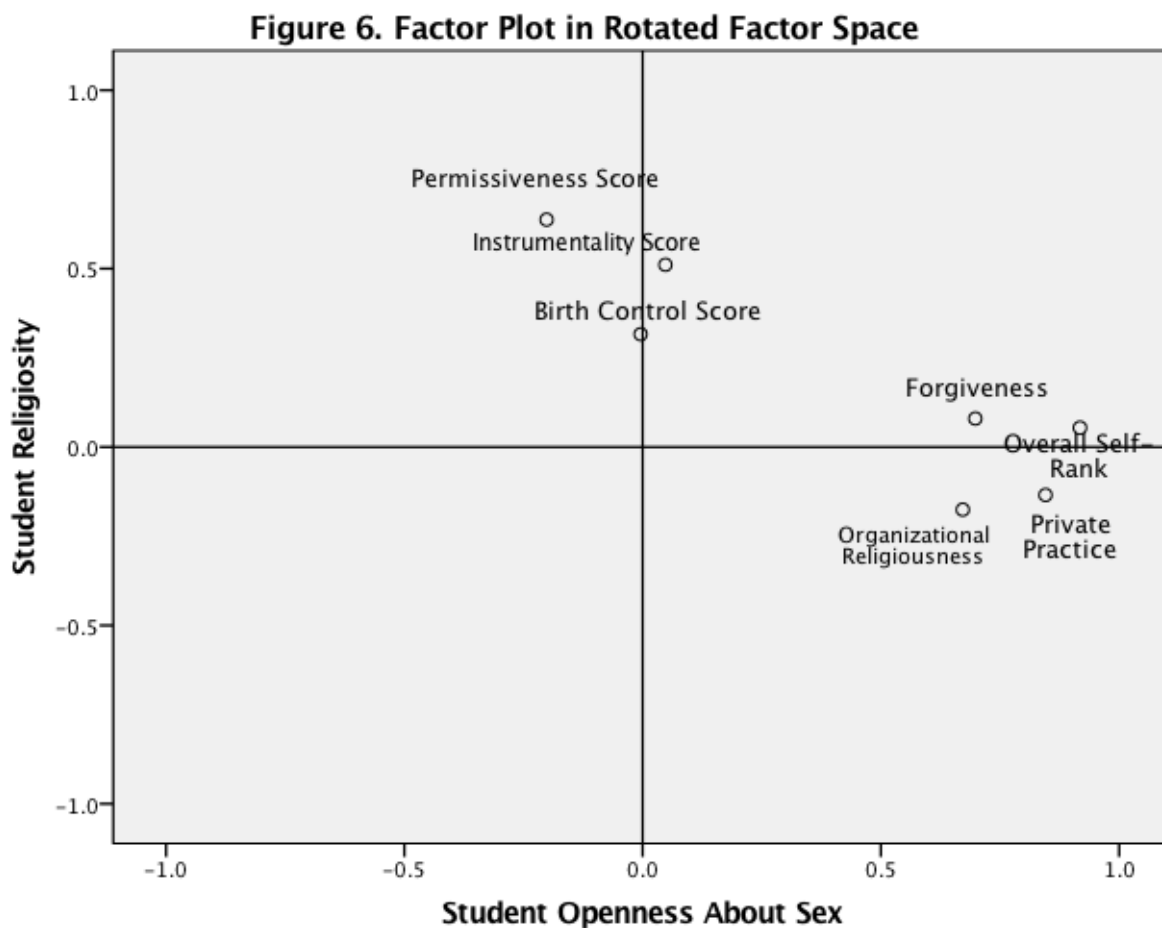
Table 34. *Fit Indices for Exploratory Factor Models of Students' Sexual Activity and Sexual Risk Behaviors*

| Measure | $\chi^2$ | *df* | CFI | TLI | RMSEA | SRMR |
|---|---|---|---|---|---|---|
| 1 Factor | 348.599* | 54 | 0.847 | 0.813 | 0.095 | 0.228 |
| 2 Factors | 108.817* | 43 | 0.966 | 0.948 | 0.050 | 0.110 |
| 3 Factors | 56.881* | 33 | 0.988 | 0.975 | 0.034 | 0.092 |
| 4 Factors | 27.992 | 24 | 0.998 | 0.994 | 0.017 | 0.092 |

*Note.* $\chi^2$ = chi square goodness of fit statistic; *df* = degrees of freedom; RMSEA = Root-Mean-Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; SRMR = Standardized Square Root Mean Residual. * Indicates $\chi^2$ are statistically significant (p < .001).

Table 35. *Fit Indices for Revised Exploratory Factor Models of Students' Sexual Activity and Sexual Risk Behaviors*

| Measure | $\chi^2$ | *df* | CFI | TLI | RMSEA | SRMR |
|---|---|---|---|---|---|---|
| 1 Factor | 242.000* | 27 | 0.878 | 0.837 | 0.114 | 0.283 |
| 2 Factors | 37.998 | 19 | 0.979 | 0.989 | 0.041 | 0.106 |

*Note.* $\chi^2$ = chi square goodness of fit statistic; *df* = degrees of freedom; RMSEA = Root-Mean-Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; SRMR = Standardized Square Root Mean Residual. * Indicates $\chi^2$ are statistically significant (p < .001).

Table 36. *Factor loadings with geomin rotation for Revised Exploratory Factor Models of Students' Sexual Activity and Sexual Risk Behaviors*

| | Willingness to Participate in Sexual Activity | Willingness to take Sexual Risks | *Communality** |
|---|---|---|---|
| Ever Had Oral Sex | **1.05** | 0.007 | .90 |
| Ever Had Vaginal Sex | **0.87** | -0.048 | .75 |
| Ever Had Anal Sex | **0.50** | 0.20 | .33 |
| Age at First Sex | -0.16 | **-0.30** | .14 |
| Ever Had Unprotected Oral Sex | 0.005 | **0.84** | .71 |
| Ever Had Unprotected Vaginal Sex | 0.067 | **1.05** | .88 |
| Ever Had Unprotected Anal Sex | -0.041 | **0.51** | .25 |
| Condom Use at Last Vaginal Sex | 0.058 | **-0.86** | .72 |
| Pregnancy Prevention at Last Vaginal Sex | 0.200 | **-0.68** | .44 |

*Communality = the proportion of each variable's variance that is explained by the factor

Note: Loadings highlighted in bold indicate the factor on which the item was placed.

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