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## **Approval Sheet**

What role does religion play in men's contraceptive behavior? A secondary data analysis of  
2011-2013 NSFG data

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## **Abstract Cover Page**

What role does religion play in men's contraceptive behavior? A secondary data analysis of  
2011-2013 NSFG data

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## Abstract

What role does religion play in men's contraceptive behavior? A secondary data analysis of 2011-2013 NSFG data

By: Patricia Lewis

**Background:** Over half of all pregnancies in the United States are unintended. Nonuse of contraceptives is responsible for more than half of births that result from unintended pregnancies. However, men's contribution to that nonuse is understudied. Although religion has been a factor associated with non-use of contraception among younger women, the relationship between religion and men's contraceptive behavior is less understood. Dominant or traditional masculinity ideology is associated with decreased condom use in young men as well as more frequent religious service attendance among adult men. This study examined the relationship between individual-level religiosity, men's non-use of contraception, and masculinity ideology using data from the 2011-2013 National Survey of Family Growth (NSFG).

**Methods:** Logistic regression models were tested with current religious service attendance as the exposure, recent non-use of contraception as the outcome, and masculinity ideology as a mediator, controlling for other demographic covariates.

**Results:** Just over one fifth (21.6%) of men in the U.S. of reproductive age who are at risk for facilitating unintended pregnancy are not using contraception. Rates of non-use of contraception were higher among those with more frequent religious service attendance. Masculinity ideology itself was associated with non-use of contraception, and was a partial mediator in the relationship between non-use of contraception and religious service attendance. Other factors that were associated with non-use of contraception in the multivariate models included marital status, number of pregnancies fathered, age, and race/ethnicity.

**Conclusions:** Among U.S. men ages 15-44, masculinity ideology mediates the relationship between non-use of contraception with those with stronger adherence to dominant masculinity having higher odds for non-use than men with lower adherence to dominant masculinity. Odds ratios of non-use of contraception also vary by marital status, number of pregnancies fathered, age, and race/ethnicity, but not by religious service attendance. It is recommended that further cross-sectional and sub-population research be conducted to further assess these findings. The curriculum of sexual education in schools and reproductive health interventions in communities should include information regarding the influence of masculinity ideology

**Keywords:** Contraceptive behavior, religion and sex, unplanned pregnancy, masculinity ideology, men's reproductive health, National Survey of Family Growth

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## **I. Introduction**

### **Introduction and Rationale**

In the United States, half (51%) of all pregnancies are unintended (Finer & Zolna, 2014). Among women who had live births resulting from unintended pregnancies between 1998 and 2002, over half (60%) were not using contraception at the time of conception (Mosher, et al., 2012). There is a precedent of examining the influence of religion on women's non-use of contraception (Kramer et al., 2007; Jones et al, 2011). However, there are very few studies that evaluate men's birth intentions or socio-contextual factors associated with their contraceptive behavior, although men's influence on women's reproductive goals has been documented (Cowley and Farley 2001; Heavey et al., 2008; Joyce, Kaestner, & Korenman, 2000; Thompson, 1997). A previous population level study looked at certain socio-contextual factors associated with men's birth intentions including race/ethnicity, age, and educational level (Lindberg et al., 2014), but religion was not included in this analysis. However, religion has previously been found to be a factor associated with young women's non-use of contraception (Kramer et al., 2007) and teenagers' sexual risk behavior including condom-less sex (Rosenbaum, 2009).

### **Problem Statement**

To address the high rates of unintended pregnancy in the United States, it is necessary to not only address the socio-cultural factors that affect women's contraception non-use, but also those that influence men's non-use. The power dynamics present in heterosexual relationships that influence sexual and reproductive decision making has been well documented (Blanc, 2001). As both men and the women are involved in reproductive decisions to varying degrees, it is not enough to solely focus on risk factors for women not using contraception, but men's risk factors also need to be considered. Religion as a social determinant of the reproductive health for

women has been partly examined (Kramer et al., 2007; Jones et al, 2011), however, there are no population-based studies examining the relationship between men's public religious behavior (such as religious service attendance) and their reported non-use of contraception.

### **Purpose Statement**

This study will fill a gap in the research by examining the association between religion and men's non-use of contraception. The population being considered is men of reproductive age (15-44) living in the United States.

### **Research Questions**

Question 1: What is the relationship between religious service attendance and non-use of contraception among U.S. men ages 15-44?

Hypothesis 1: More frequent attendance of religious services will be positively associated with non-use of contraception.

Question 2: How does masculinity ideology play a role in the relationship between religious service attendance and non-use of contraception?

Hypothesis 2: Masculinity ideology will mediate the relationship between religious service attendance and non-use of contraception.

### **Significance Statement**

This study is an initial attempt to include men's public religious behavior in the literature that examines socio-cultural factors related with non-use of contraception. Having a better understanding of factors associated with contraception non-use can help inform policies and interventions that aim to reduce the high rates of unintended pregnancies in the U.S.

## Definition of Terms

- *At risk for unintended pregnancy (women)* – having had sexual intercourse with a man within the last 3 months (with or without using contraception), not currently pregnant or postpartum, not sterile for noncontracepting reasons, and not currently seeking to become pregnant (Jones, Mosher, & Daniels, 2012)
- *At risk for unintended pregnancy (men)* – having had sexual intercourse with a woman within the last 3 months (with or without using contraception) and not currently seeking to become pregnant
- *Completed pregnancy* – any pregnancy that results in a live birth
- *Contraception* – any method, artificial or natural, used to prevent conception. Can include traditional methods such as withdrawal or fertility awareness, barrier methods such as condoms or diaphragms, hormonal methods such as pills, shots, or rings, long acting methods such as intrauterine devices (IUDs) and implants, and surgical methods such as tubal ligation or vasectomy.
- *Gender* – a socially constructed concept of masculinity and femininity. Gender is not simply a binary of male and female, but rather “a set of socially constructed relationships which are produced and reproduced through people's actions” (Gerson & Peiss, 1985, p. 327)
- *Masculinity Ideology* - a normative perspective of gender that focuses on the way in which different cultures define masculinity and the consequences of those definitions (Pleck, Sonenstein, & Ku, 1993)
- *Religious Affiliation* – the religious group(s) or denomination that a person identifies with

- *Religious Service Attendance* – attending a ceremony or service that has religious meaning; generally conducted in a house of worship such as a church, synagogue, or mosque. Can include divine service, prayer meetings, Sabbath services, etc.
- *Reproductive Age* – between the ages of 15 to 44
- *Sexually Active* – having had penile-vaginal penetration sex within the last three months
- *Unintended Pregnancy* - a pregnancy that is either mistimed (occurring at a time when the couple did not want to become pregnant) or unwanted (if the couple did not want to become pregnant then or any time in the future) (Finer & Zolna, 2014)

## II. Literature Review

A comprehensive analysis of population data from the 2006-2010 NSFG as well as Guttmacher Institute's Abortion Patient Survey data concluded that 51% of the pregnancies that occurred in 2008 in the U.S. were unintended, including those that ended in miscarriage, induced abortion, and live birth (Finer & Zolna, 2014). This is higher than the rate in 2001 of 48% pregnancies being unintended. Results from analysis of the NSFG data seem to indicate an increasing rate of unintended pregnancies since 1995 (Kissin, et al., 2008) as well as an increase in unintended pregnancies that end in live births (Finer & Zolna, 2014). Unintended pregnancy rates in 2008 were highest among women with no religious affiliation. Although Catholic and Protestant women reported similar rates of unintended pregnancies, Catholic women were more likely to have unintended pregnancies that ended in abortion than any other religious group (Finer & Zolna, 2014).

The above rate of unintended pregnancies is based solely on women's accounts, as men are sometimes unaware of pregnancies their female partners have (Martinez, 2006). However, the NSFG does collect information from men regarding wantedness of children fathered at time of conception. In 2002, men reported that 65.2% of the children they fathered in the past five years were wanted, 24.8% were mistimed, and 8.6% were unwanted (Martinez, 2006).

According to data from the 2006-2010 NSFG, 37% of live births during this time period resulted from unintended pregnancies (Mosher, Jones, & Abma, 2012). Comprehensive reviews from the Institute of Medicine (Brown & Eisenberg, 1995) and The National Campaign to Prevent Teen and Unplanned Pregnancy (Logan, et al., 2007) have shown that births from unintended pregnancies can place the mother and child at higher risk for adverse health and socioeconomic outcomes both during pregnancy and at the time of birth. Women with an

unintended pregnancy are more likely to delay seeking prenatal care and are less likely to breastfeed the child. A child born from an unintended pregnancy is more likely to have poor physical and mental health outcomes, lower education attainment, and disruptions in the mother-child bond (Brown & Eisenberg, 1995; Logan, et al., 2007). Because of the adverse outcomes of unintended pregnancies for women, their families, and the economy, reducing the percentage of unintended pregnancies is part of the Healthy People 2020 agenda.

**Non-use of contraception.** Unintended pregnancies are attributed to either contraceptive method failure, ineffective use of a method, or contraceptive nonuse (Sable and Lubbus, 1998b). Among women who had live births resulting from unintended pregnancies between 1998 and 2002, over half (60%) were not using contraception at the time of conception (Mosher, et al., 2012). Using the 2006-2012 NSFG data, the National Center for Health Statistics (NCHS) estimated that among women ages 15-44 who were at risk for unintended pregnancy (having had sex in the last three months, not currently pregnant or postpartum, and not currently seeking a pregnancy), 11% were not using any form of contraception (Jones, Mosher, & Daniels, 2012). This is significantly higher than the 2002 estimation of 7.4% of at risk women not using contraception (Mosher, et al., 2004). The percentage of at risk women not using contraception was higher for adolescent women (18%), black women (17.2%), and those with less than a high school diploma (11.7%). Marital status was also a factor in non-use of contraception as only 7.5% of at risk married women were non-users compared to 17.4% of never married women. Finally, when examining contraception nonuse by religious affiliation among those who were at risk for unintended pregnancy, Catholic women had similar rates of nonuse (11.3%) as the average, fundamentalist Protestants had a slightly lower rate of nonuse (10.1%), and those from

another Protestant denomination had a similarly lower rate of nonuse (9.8%) (Jones, Mosher, & Daniels, 2012).

The above calculations of non-use of contraception among women at risk for unintended pregnancy were based solely on the women's responses to the NSFG. When calculating the percentage of men who are at risk for facilitating an unintended pregnancy, pregnancy status or postpartum status of partner are not included as the man could still cause the pregnancy of another woman. Therefore, in 2002, about 30% of all men ages 15-44 who were considered at risk for unintended pregnancy (having had sexual intercourse in the last three months) were considered non-contraceptors as neither they nor their female partner used a contraceptive method at last intercourse (note, these data do not take into consideration current pregnancy desire) (Martinez, 2006). When considering only unmarried men, the percentage reporting non-use of contraception was 20%.

Various theories and approaches have been used to explain why some people do not use contraception even when they are not intending to become pregnant. However, most of these approaches focus on the woman as the main decision maker in contraception use (Sable and Libbus, 1998b). Researchers have used Azjen's Theory of Planned Behavior (Azjen, 1988) to evaluate why a woman might decide to use or not use contraception (Sable & Libbus, 1998a; Lifflander, Gaydos, & Hogue, 2007). This theory posits that behavior is the result of three interacting concepts: attitudes and beliefs about the behavior, social norms regarding the behavior, and perceived facility or barriers to performing the behavior. In this model's application to contraception, the focus is on intention, not just the individual woman's desire. "Intention, the conscious commitment to try to achieve a goal at some time in the future, takes into account the perceived desires of others as well as situational factors. Intention gives rise to

behavior that may produce a planned pregnancy, such as stopping contraceptive use” (Lifflander, et al., 2006, p. 82).

Using this theory, Sable and Libbus (1998a) found that the low income women in their qualitative study saw potential side effects of hormonal contraception, embarrassment about acquiring condoms, and stressful or chaotic life situations as deterrents to consistently using contraception. In their qualitative exploration, Lifflander et al. (2006) found that Azjen’s theory describes the behavior when a woman’s intention is clearly to become pregnant. Motivations, attitudes, and beliefs line up to influence intention and, ultimately, behavior towards becoming pregnant, such as stopping contraception use. They also found that women failed to use contraception when the costs of contraception outweighed the benefits, or the benefits of having a child outweighed the costs. This aligned more with Luker’s Theory of Contraceptive Risk Taking and Abortion (Luker, 1977) which posits that when a woman who has access to and education about different contraception methods decides not to use contraception, it involves a calculated cost/benefit analysis of contraception and pregnancy.

To address multiple external factors that influence contraception use, Sable and Libbus (1998b) proposed a comprehensive conceptual model of the factors associated with contraception use that includes structural factors (i.e. financial resources, education, access to healthcare) and socio-cultural factors (i.e. beliefs and values, acceptability of contraception in peer group, masculinity ideology, and religious doctrine).

The structural factors associated with contraceptive use have been explored in studies with women who reported unintended pregnancies. Women noted that the cost of contraception, stress from chaotic life situations, and access to health care facilities were barriers to effective contraceptive use (Liffander, et al., 2006; Biggs, Karasek, & Foster, 2012). Also, misinformation



about contraceptive effectiveness and personal fertility were commonly cited reasons for non-use (Biggs, et al., 2012; Mosher, et al., 2012). Other more attitudinal barriers to contraception use that have been explored in the literature include ambivalence about pregnancy, concern about side effects of contraception, and not having planned to have sex (Liffander, et al., 2006; Zabin, 1999; Biggs, et al., 2012; Mosher et al., 2012). Common socio-cultural reasons women give for not using contraception include believing that sex is more natural without contraception (Biggs, et al., 2012), relationship insecurity (Liffander, et al., 2006), male partner not wanting to use contraception himself or not wanting her to use contraception (Mosher, et al., 2012), and concern that church members or clergy would disapprove of contraception use (Libbus, 1997). As the socio-cultural factors of male partner influence and religion are not fully explored in the literature regarding contraception, this paper will focus on the intersection of these factors.

**Religion and Contraception.** “All religious traditions have a natural interest in the reproductive process” (Gaydos & Page, 2014, p.179). Some religious traditions are more outspoken about this interest than others, even including it in their policies or doctrine. Among Christian churches in the United States, policies regarding contraception vary, but there are three main approaches: (1) forbidding all forms of ‘artificial’ contraception, which includes barrier methods, hormonal methods, sterilization, and withdrawal (e.g. Roman Catholic), (2) forbidding only some forms of contraception, primarily IUDs and emergency contraception, which are believed by some groups to be abortifacients (e.g. Southern Baptists), and (3) supporting the full range of modern contraceptive technology (e.g. Methodists) (Gaydos & Page, 2014). Although many Protestant churches support a full range of contraception access for married individuals, it should be noted that most Evangelical leaders oppose sexual activity, and, therefore, contraception use among unmarried individuals of all ages. Mainline Protestants have been

typically more permissive, supporting contraception choice for all regardless of marital status (Jones & Dreweke, 2011).

This prohibition of contraception among unmarried individuals may play a role in their non-use and, ultimately, the health of young people. Data looking at women's first premarital intercourse from 1965-1988 found that women who identified as Fundamentalist Protestants were less likely to report using contraception than women who identified as Catholic or Mainline Protestant (Mosher & McNally, 1991). Research using data from more recent years indicates that while rates of contraception use do not vary significantly across religious affiliation among adult women (Jones & Dreweke, 2011; Karamer, Hogue, & Gaydos, 2007), among adolescents, there are some variations by religious affiliation (Kramer, et al., 2007; Rosenbaum, 2009; Bearman & Brückner, 2001). A study based on 2002 NSFG data found that adolescent women who identify as Fundamentalist Protestant are five times less likely to use contraception and that Catholic adolescents are 15 times less likely to use contraception when compared to Mainline Protestants (Kramer, et al., 2007). Furthermore, studies using the National Longitudinal Study of Adolescent Health found that adolescents who participate in virginity pledges (a sexual abstinence curriculum originally created by an evangelical Christian organization) are less likely to use contraception during sex than peers who did not pledge (Rosenbaum, 2009; Bearman & Brückner, 2001).

Reductionist theorists in sociology may attribute these differences in contraception use among religious adolescents as solely differences in social class, ethnicity, race, or solidarity. However, sociologist Christian Smith (2003) stresses the point that we should look at the "realities we study as multidimensional and multileveled and involving emergent properties and supervenient processes" (p.19). Religion itself cannot be assumed to be just a set of doctrines:

religion is dynamic and can be thought of as an involvement, a set of commitments or beliefs, or even a subculture within the larger U.S. society (Regnerus, 2007). The idea that religion can be used as a form of social control to curb sexual and reproductive health behavior is in line with theories postulated by Marx, Weber and Durkheim. Many fundamentalist religious traditions believe that human nature is biased toward ‘sinning’, and participating in a religious community can help prevent young people from ‘falling into sin’ (Regnerus, 2007). Christian Smith (2003) theorized mechanisms by which religious groups can influence the behavior of their young members. He proposed three “conceptual dimensions of social influence” to categorize religious factors that influence adolescent behavior. The first of these dimensions is moral order, which suggests “the idea of substantive cultural traditions grounded upon and promoting particular normative ideas of what is good and bad...which orient human consciousness and motivate human action” (Smith, 2003, p.20). Youth are influenced by moral order primarily through moral directives given by the tradition, their own personal spiritual experiences, and role models in their congregations or other religious venues. The next dimension is learned competencies, which can include skills such as leadership in community settings, coping skills, and cultural capital. The third dimension includes social and organizational ties of religious traditions including social capital, access to resources in their network, and broader national or transnational ties. All of these dimensions interacting together have the possibility to influence the behavior of a member of a religious group.

However, being a member of a church with a certain doctrine regarding sexuality or contraception does not necessarily lead to the prescribed behavior. People, just like religious institutions, are multidimensional and occupy various roles within their communities. Some of those roles might be incompatible with their religious identity. For adolescents whose religious

identities are very important to them, doing something that violates the religious norms could cause a great deal of guilt and cognitive dissonance (Regnerus, 2007). Anthropologist Melissa Browning (2010) described how this cognitive dissonance may actually lead to inconsistent condom use among virginity pledgers. In her ethnographic study, she found that purity pledgers would not carry condoms because that would be ‘planning’ for sex. It would be better to just slide into it and make a ‘mistake’ than to plan for sex, which would constitute a premeditated sin. This cognitive dissonance not only results in guilt about a behavior that does not conform to the young person’s religious identity, but it also may bring about risky sexual behavior.

There are a myriad of ways in which health researchers and social scientists have attempted to measure the influence of religion on one’s health behavior or even health outcomes. Idler et al. (2009) note how health science research moved from focusing on religiousness as a group characteristic in the 1960s and 70s when epidemiologists studied differences in mortality between different Christian denominations, to more individual-level religious measures in the 1980s and onward. Individual measures focused on religious attendance or the importance of religion in one’s life, but not necessarily focusing on the actual religious affiliation of that person. More recently, researchers have been focusing on the private experience of religion (or spirituality) such as relationship with god, feelings of transcendence, or frequency of prayer/meditation instead of the congregational or public behavioral aspects of religion (Idler, et al., 2009). However, as noted in the meta-analysis of religion and all-cause mortality done by McCullough et al. (2000), the measure of religious attendance is the most frequently used in health research and it had a larger effect size than the private religiosity variables when looking at all-cause mortality. This seems to point to religious attendance or one’s public religiosity as being a more robust measure of religion’s influence on health outcomes. Idler et al. (2009)

endeavored to study what it was about religious service attendance that influenced physical health. Through exploratory factor analysis they found that attending religious services encompasses an array of experiences for the individual including positive emotions, a sense of belonging, joy, and a collective consciousness that could influence one's physical health.

While religiosity can have individual level health effects, it may also have ecological effects in its influence over policy (Kramer et al., 2007). For example, when looking at state level data, those states with higher reports of conservative religiosity have higher rates of teen pregnancy, even when controlling for mean income and abortion rates (Strayhorn & Strayhorn, 2009). The authors Strayhorn and Strayhorn conjectured that religious communities are successful at discouraging teen contraceptive use, but not necessarily teen sexual activity. A more recent study found that states that mandate abstinence-only education in schools have higher rates of teen pregnancy than states that promote comprehensive sex education (Stanger-Hall & Hall, 2011). These abstinence-only education programs were born out of abstinence movements in the evangelical churches in the 1990s (Strayhorn & Strayhorn, 2009) and still maintain overtones about purity and traditional gender roles even in parochial and public settings (Browning, 2010). Although opposition to pre-marital sexual behavior in most religious groups in the U.S. has declined over the past few decades, evangelical Protestant churches have not shared that decline (Petersen & Donnenswerth, 1997). While traditional views of opposing sexuality outside of marriage are expected within a conservative church community, the infiltration of those ideas into the public school systems through the implementation of abstinence-only curriculum may have more far-reaching effects, particularly on the rates of teen pregnancy (Strayhorn & Strayhorn, 2009).

A final way in which religion can influence contraceptive use is through the promotion of traditional or strong masculinity beliefs. While using the Baylor Religion Survey of 2007, Whitehead (2012) found that Christians (both men and women) who believe in the literal translation of the Bible are more likely to hold traditional views of gender including ideas that men are better suited for leadership positions, it is women's place to stay at home and care for children, and that the husband should be the main breadwinner. Also, those who report higher levels of religious practice are more likely to embrace these traditional views of gender. More specifically, Evangelical Protestants were more likely to hold these conservative views than were Mainline Protestants, Black Protestants, Catholics, and religiously unaffiliated individuals (Whitehead, 2012). In order to understand how strong masculinity beliefs can influence contraception decisions, it is important to first explore masculinity as a concept and its association with men's health behavior in general.

**Masculinity ideology and contraception.** The perspective of masculinity ideology as proposed by Pleck, Sonenstein, and Ku (1993) involves a social constructionist view of gender norms that focuses on the way in which different cultures define masculinity and the consequences of those definitions. In this "normative approach", masculinity is viewed as a cultural construction, not as something that is biologically or psychologically inherent. It is proposed that men "act in the ways they do...because of the conception of masculinity they internalize from their culture" (Pleck, Sonenstein, & Ku, 1993, p.15). There is not one static type of masculinity pronounced in each culture, but rather multiple masculinities exist that interact with what society has determined the ideal type of masculinity to be – hegemonic masculinity (Connell & Messerschmidt, 2005). The cultural ideal of masculinity in the U.S. includes characteristics that may influence intimate relationships such as expectations of sexual prowess,

having control or dominance in the relationship, a strong focus on self-reliance, and not being willing to demonstrate emotions or 'weakness'. In this perspective, masculinity is not simply a personality trait but an ideology - "a set of beliefs and expectations about what men are like and should do" (Pleck, Sonenstein, & Ku, 1993, p.15).

Gender theorists and researchers suggest that health related behaviors are one way in which men can enact hegemonic masculinity (Courtenay, 2000; Springer, & Mouzon, 2011). Just as violence and language are used in ways to produce gender and power dynamics in men and women's interactions, so too can health related behaviors be used to shape gender (Courtenay, 2000). In the U.S., health-related behaviors that typically demonstrate hegemonic masculinity may include "denial of weakness or vulnerability, emotional and physical control, the appearance of being strong and robust, [and] dismissal of any need for help" (Courtenay, 2000, p.1389). However, men are not simply passive agents being conditioned by these cultural scripts of hegemonic masculinity; they are actively constructing and deconstructing masculinity norms (Courtenay, 2000). When a man engages in risky behavior, denies pain, brags about not having seen a doctor in years, or refuses to practice safe sex, he is participating in the construction of hegemonic masculinity.

Gendered demonstrations of health related behavior are part of the larger system of patriarchy that seeks to demean women through displays of power and dominance. As Courtenay (2000) explains:

In exhibiting or enacting hegemonic ideals with health behaviours, men reinforce strongly held cultural beliefs that men are more powerful and less vulnerable than women; that men's bodies are structurally more efficient than and superior to women's bodies... and that the most powerful men among men are those for whom health and safety are irrelevant (p.1389)

Although the demonstration of these negative health related behaviors is a tool used in the subordination of femininities and non-hegemonic masculinities, this display of power is ultimately harming the men who enact them. Smaller studies have found that those men who endorse stronger or more traditional masculinity beliefs report more negative health-related behavior and poorer overall well-being (Houle, et al., 2015; Wade & Rochlen, 2013; Mahalik, et al., 2007). Some researchers and theorists point to the lower life expectancy of men to be in part a product of the negative health related behaviors associated with hegemonic masculinity (Courtenay, 2000; Springer, & Mouzon, 2011).

Strong masculinity beliefs not only include the endorsement and demonstration of the hegemonic archetype but also the rejection of values that are considered feminine (Courtenay, 2000). Not only are regular health care utilization and positive health care beliefs seen as feminine (Courtenay, 2000), but, more specifically, contraception use is generally viewed to be in the feminine realm (apart from vasectomy and male condoms), especially since the advent of more effective female methods of contraception like the pill, IUDs, and implants in the late 20th century (Edwards, 1994). As a result, in the way that hegemonic masculinity rejects positive health behavior because it is seen as feminine, it may also influence the way men use (or don't use) contraception. However, little is known about men's contraceptive behavior in heterosexual relationships as scientists and providers have focused much of their attention on women's use of contraception, so much so that much of the research that does consider men's influence on contraceptive use is taken from the woman's perspective, extrapolating her responses about relationship dynamics and contraceptive use (Sable & Libbus, 1998b).

As the role men play in contraception behavior is understudied, the factors affecting their behavior are not fully understood. However, some studies done in the U.S. with small samples of



men point to strong masculinity ideology being negatively associated with safe contraceptive beliefs (Grose, Grabe, & Kohfeldt, 2014; Vincent et al., 2016). Strong masculinity beliefs have also been found to be a factor in contraceptive behavior among U.S. men. Using the Male Role Attitudes Scale developed by Pleck et al., (1993), men who held more traditional attitudes about masculinity had inconsistent condom use compared to those with less traditional attitudes (Pleck et al., 1993; Marsiglio, 1993). Men with traditional masculinity views were also less likely to believe that men should take a responsible role in pregnancy prevention and are more likely to believe that causing the pregnancy of a woman would validate his masculinity (Pleck et al., 1993).

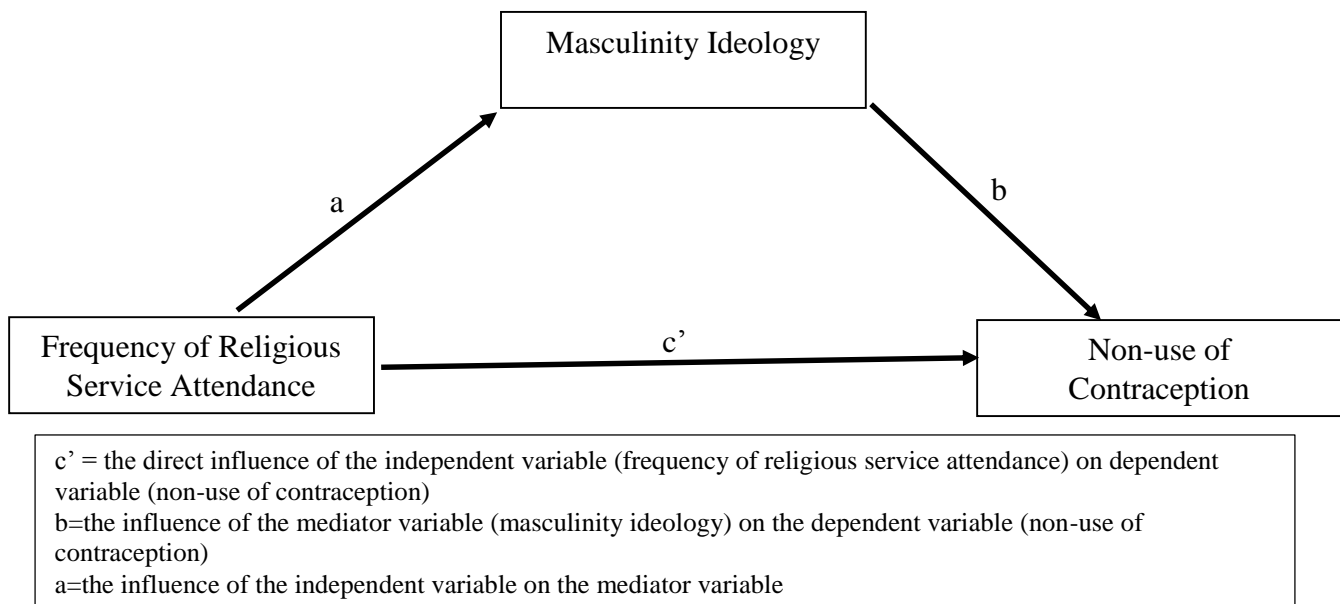
The different social institutions that men interact with “elicit different demonstrations of health beliefs and behaviours, and provide different opportunities to conduct this particular form of demonstrating gender” (Courtenay, 2000, p.1388). One such social institution that can elicit these demonstrations of gender is the religious institution a man attends. As previously noted, those who attend religious services more frequently are more likely to hold traditional views of gender than those who attend less frequently (Whitehead, 2012). Therefore, one might postulate that those who attend religious services with more frequency may hold more traditional masculinity beliefs, which in turn may put them at more risk for not using contraception.

### **Summary**

The United States has a high rate of unintended pregnancies compared to other similarly positioned countries (Finer & Zolna, 2014). Contraception non-use has been demonstrated to be a major factor contributing to unintended pregnancy (Mosher, et al., 2012). Although much research has looked at factors associated with women’s non-use of contraception including the socio-cultural influences of religion (Kramer et al., 2007; Jones et al, 2011), very few studies

have focused on factors associated with men's contraceptive non-use in heterosexual relationships. As strong masculine beliefs has been shown to influence men's non-use of contraception (Pleck et al., 1993), and more frequent religious attendance is associated with an endorsement of more traditional gender ideology (Whitehead, 2012), religion may influence men's non-use of contraception through the mediator of masculinity ideology. This current research seeks to provide researchers, health practitioners, policy makers, and religious leaders with a more in-depth look at how religion plays a role in men's contraceptive decision making. The conceptual diagram in Figure 1 demonstrates the mediator effect of masculinity ideology between religious attendance and contraception non-use among men of reproductive age.

**Figure 1: Religious Attendance and Non-use of Contraception Conceptual Diagram**



### **III. Methodology**

#### **Introduction**

A secondary data analysis of cross-sectional data from the National Survey of Family Growth (NSFG) 2011-2013 was used to explore the relationship between religious service attendance and non-use of contraception among U.S. men ages 15-44.

#### **Sample**

From September 2011 to September 2013, the NSFG conducted over 10,000 interviews with men and women across the United States (National Center for Health Statistics, 2014). This analysis will focus on the 4,815 men included in the sample. Interviews were conducted using the computer-assisted interviewing (CAPI) method. The average interview time for men was 60 minutes. The response rate for men was 72.1%. Along with basic demographic information, men were asked questions regarding sexual activity, contraceptive use, childbirth, marriage, divorce, involvement with children, and accessing sexual and reproductive services. This data set was chosen for the purpose of this study as it is nationally representative and includes rich information on contraception use, religiosity, and items measuring masculinity ideology.

As this current study was focusing solely on men who were considered at risk for unintended pregnancy, only those who were sexually active and not actively seeking pregnancy were included in the analysis. Of the 4,815 men participating in the 2011-2013 NSFG, 1,688 had not had sexual intercourse with a woman in the three months before the interview and were therefore excluded from this analysis as they were considered to not be sexually active. An additional 132 men were actively seeking a pregnancy with their partner and were therefore excluded on the basis of not being at risk for an unintended pregnancy. A total of 2,995 men at risk for unintended pregnancy remained, and another 15 participants were dropped from the final

analysis due to missing information regarding religious affiliation and/or religious attendance (n=7) or had missing data regarding contraception (n=8). The final analysis included 2,980 eligible participants. All results presented are based on this subsample of 2,980, which constitutes 62% of the original sample.

## **Procedures**

In the current analysis of the 2011-2013 NSFG data, we modeled the relationship between religion and men's contraception behavior. Recent (within three months) non-use of contraception served as the dependent variable. For those who were sexually active within the three months prior to the interview, contraception behavior was measured by inquiring about contraception method(s) reported at last sexual intercourse with a woman. The contraception methods reported by the male participants were dichotomized into two categories: those who either they or their partner were using a contraception method at time of last sexual intercourse (including traditional methods, barrier methods, hormonal methods, and surgical sterilization) and those who neither they nor their partner were using a form of contraception at last intercourse. If the participant did not use contraception at the time of intercourse and did not know if his partner was using contraception, this data was counted as missing.

Current religious attendance was the primary explanatory variable. Religious attendance was categorized in the following manner: (1) more than once a week (2) once a week; (3) 2-3 times a month; (4) once a month (5) 1-11 times a year (6) never. The original NSFG variable distinguished between the frequencies of 3-11 times a year and once or twice a year, however, for the purpose of this analysis, these categories were collapsed to create 1-11 times a year. It should be noted that the original two categories had similar rates of non-use of contraception (19.94 and 19.54, respectively).

Masculinity ideology served as the primary mediating variable in this analysis. To measure masculinity ideology, a variable was created using six behavioral items from the NSFG. Items were chosen based on their similarity to items used in the Male Role Norms Inventory – Revised (MRNI-R) (Levant, et al., 2007). These items measured men’s attitudes regarding sex, gender, self-reliance, fear or hatred of homosexuals, and parenthood. A list of items selected from the NSFG and comparative items in the MRNI-R can be found in Table 1 in the Appendix. The NSFG used a Likert scale to measure how much the participant agreed with the statement being asked. Some of these items needed to be recoded for the purpose of the masculinity scale in order for a higher number on the scale to reflect more adherence to dominant masculinity ideology. Whether an answer reflected more traditional masculinity ideology or less was determined by the author based on Thompson and Bennett’s (2015) review of measurements of masculinity ideology. Internal consistency of the scale was determined using a Cronbach Alpha’s test.

As insufficient evidence exists regarding social and demographic factors that affect men’s non-use of contraception in heterosexual relationships, literature examining social factors that influence women’s reproductive behavior was used to select covariates. Age has been found to be a factor in women’s non-use of contraception (Kramer et al., 2007; Jones, Mosher, & Daniels, 2012) as well as men’s condom use (Martinez et al., 2006). For both men and women, it seems that non-use of contraception varies by racial and ethnic background (Martinez et al., 2006; Jones, Mosher, & Daniels, 2012), however, those findings do not control for socio-economic status. Among women, parity has been found to be associated with contraception non-use (Jones, Mosher, & Daniels). Non-use of contraception also varies by marital status among women (Jones, Mosher, & Daniels, 2012; Kramer et al., 2007) and men (Martinez et al., 2006).

Among adult women, non-use of contraception varies by income level (Kramer et al., 2007) and factors that are generally associated with socio-economic status such as cost and access have been found to be barriers to effective contraception use (Liffander, et al., 2006; Biggs, Karasek, & Foster, 2012). However, as the sample for this current study included young men (20-25) and adolescents (15-19) who might not have a personal income that is reflective of the socioeconomic status of their family of origin, mother's educational level was used as a proxy for socio-economic status. There is precedent for this measurement in other population-level studies in the U.S. that evaluate adolescent's health behavior (Jaccard, Dodge, & Dittus, 2003; Mitchell & Pauls, 2006).

### **Analysis**

Tetrachoric correlations were estimated to determine potential confounders in the relationship between non-use of contraception and religious attendance. Bivariate associations of religious attendance, non-use of contraception, and other covariates were estimated to test the hypothesis that the percentage of non-contraceptors were similar across religious attendance. Multivariate logistic regression models were conducted controlling for confounders that were found to be independently significantly associated with non-use of contraception. Religious affiliation also was included in the model, although it was not found to be independently significantly associated with non-use of contraception although it had a high level of correlation with religious attendance. All analyses were completed using STATA SE 14 (StataCorp, 2015).

### **Ethical Considerations**

This analysis was determined to be IRB-exempt because it does not meet the definition of research with "human subjects" or "clinical investigation" as set forth in Emory policies and

procedures and federal rules. All portions of the study were reviewed by Emory University's Institutional Review Board (IRB00087755) and determined to meet the criteria for exemption.

### **Limitations and Delimitations**

Potential limitations to this analysis include men's lack of knowledge about women's contraceptive use. There is a measure for 'don't know' and all men who answered as such were excluded from the final multivariate analyses, but even among the men who answered that their female partner was using a contraceptive method, they may not have accurate knowledge on current use or even consistency of use. There is also a risk of recall bias as the latest sexual encounter could have been up to three months ago. Finally, those in the younger age categories do not have as many respondents who had sex within the last three months as in the older age brackets, making the sample more weighted towards older adults.

The study was delimited by focusing on men in the U.S. population, specifically those of reproductive age (15-44). It was further limited by only including those men who were sexually active (having had sex in the last three months). Although other religious variables were present in the data set (religious service attendance at 14 years old, religious tradition raised in, and current importance of religion in one's life), it was decided not to include these in the analysis. Religious attendance at 14 was excluded due to the high potential of recall bias. Religion raised in was excluded due to the feasibility of linking current behavioral outcomes to childhood factors. It should be noted that a bivariate analysis did not demonstrate any significance between religion raised in and current contraception behavior ( $p=0.157$ ). Finally, religions importance was excluded because of the large number of missing observations for this variable ( $n=745$ ) as only those with a current religious affiliation answered this question. The large number of missing observations could have had the potential of skewing the final models.

Also, a bivariate analysis of religious importance and method use demonstrated that this was not a statistically significant relationship ( $p=0.077$ ).



## IV. Results

### Introduction

Just over one fifth (21.6%) of men in the U.S. of reproductive age who are at risk for facilitating unintended pregnancy are not using contraception. Rates of non-use of contraception were higher among those with the most frequent religious service attendance. However, when adjusting for various socio-economic covariates in the multivariate model, the association lost significance. Masculinity ideology partially mediated the relationship between non-use of contraception and religious service attendance. Covariates associated with non-use of contraception in the multivariate models included masculinity ideology, marital status, number of pregnancies fathered, age, and race/ethnicity.

### Findings

**Characteristics of the study population.** (Table 2 in the Appendix provides an overview of the demographic information of this sample). This sample consisted of a majority of Non-Hispanic White men (47.8%, n=1,423), with Hispanic men making up the second largest ethnic/racial group (24.0%, n=716). Non-Hispanic Black men represented 20.2% (n=602) of the same and Non-Hispanic men from other races or multiple races men constituted a smaller minority of the sample (8.0% n=239). The median age of study population was 29.9 (SD=8.01). The average income was 255% (SD=161.68) of the federal poverty line. Approximately 22.4% (n=667) of this sample were living below the federal poverty line. The majority of the mothers of the men in this sample had at least a high school diploma (76.9%, n=2,294), and 19.3% (n=576) had a bachelor's degree or higher.

Half of the men in this sample were either married to (34.7%, n=1,034) or cohabitating with (15.9%, n=475) a female partner. Approximately 8.3% (n=248) had been previously married, but

were currently divorced, separated, or widowed. Another 41.0% (n=1,223) of the sample had never been married. The majority of men (60.8%, n=1812) had fathered at least one completed pregnancy, and 24.8% (n=758) had fathered at least three completed pregnancies. The majority of men used contraception with their female partner (78.4%, n=2,337), but another 21.6% (n=643) reported non-use of contraception.

A large percentage of the men (68.1%, n=2026) identified as Christian with 66.8% (n=1354) of Christians identifying as Protestant and 33.1% (n=672) as Catholic. Another 7.0% (n=209) of the sample were from other religious backgrounds and a quarter of the sample (n=745) held no religious affiliation. In this sample of men, the most common frequency of religious attendance was 1-11 times a year (30.8%, n=919) followed by never (30.7%, n=915). Only 14.6% (n=422) of men attended services once a week and even less (5.6%, n=168) attended religious services more than once a week.

The masculinity scale had a Cronbach's Alpha score of 0.5635, which is modest, but similar to the reliability of an 8-item Male Role Attitudes scale used by Pleck, Sonenstein, and Ku (1993), which had a Cronbach Alpha's score of 0.56. Although the internal reliability was less than ideal, as it was in the case of Pleck and colleagues, "it was considered adequate for use in further study" (p.19). The low reliability can most likely be attributed to the small number of items used, as the behavioral questions available on the NSFG were limited. With the six items together, the scale ranged from a low of six (indicating low traditional masculinity ideology) to a high of 30 (indicating high traditional masculinity ideology). The mean score on the scale for this sample was 16.13 (SD=4.25). The scale was divided into quintiles (5) for the analysis to allow for non-linearity in the relationship with non-use of contraception. The first quintile, those with the lowest levels of traditional masculinity ideology, was comprised of 21.4% (n=638) of the

sample; the second quintile had 22.7% (n=676); the third had 17.7% (n=527); the fourth had 22.3% (n=665); and the fifth quintile, those with the highest level of traditional masculinity, was comprised of 15.9% (n=474) of the sample.

**Tetrachoric correlation analysis.** To identify covariates that could be considered confounders for the multivariate regression models, bivariate tetrachoric correlations were estimated to assess the strength of the relationship between the dependent variable (non-use of contraception), the main explanatory and mediator variables (religious service attendance and masculinity ideology), and several covariates, including age, race/ethnicity, number of completed pregnancies fathered, poverty level, religious affiliation, and marital status. Each of the covariates was significantly associated with non-contracepting behavior except for religious affiliation and household income. Household income was excluded from the final analysis, as it was not correlated with non-use of contraception in this analysis, however, religious affiliation was included in the final regression model, as it was strongly correlated with religious attendance and masculinity. Some of the stronger correlations will be discussed here, but for a full matrix of the correlation results, please see Table 3 in the Appendix.

Covariates with some of the strongest correlations with non-use of contraception were age, marital status, and completed pregnancies fathered. For example, being an adolescent (age 15-19) was negatively associated with non-use of contraception ( $r = -0.37421$ ;  $p < 0.01$ ). Similarly, being a young man from age 20 to 24 was negatively correlated with non-use of contraception, but the correlation was not as strong as adolescents ( $r = -0.1737$ ;  $p < 0.01$ ). Being married was positively correlated with non-use of contraception ( $r = 0.3057$ ;  $p < 0.01$ ) while having never been married was negatively associated with non-use ( $r = -0.4070$ ;  $p < 0.01$ ). Finally, not having had

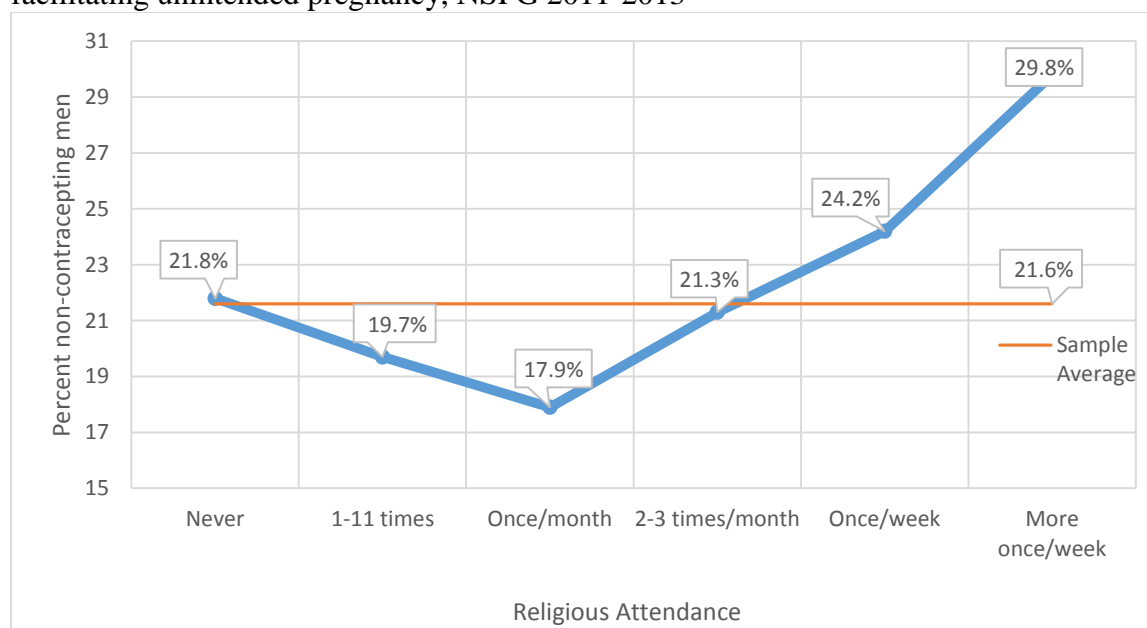
fathered any completed pregnancies was negatively correlated with non-use of contraception ( $r = -0.227$ ;  $p < 0.001$ ).

The exposure, religious service attendance, was strongly correlated with masculinity ideology and religious affiliation and was also correlated with, to a lesser degree, race/ethnicity and marital status. Strong adherence to dominant masculinity was negatively correlated with never attending religious services ( $r = -0.194$ ;  $p < 0.01$ ) and positively correlated with attending more than once a week ( $r = 0.2229$ ;  $p < 0.01$ ). In regards to religious affiliation, being of a Black Protestant denomination was negatively correlated with never attending religious services ( $r = -0.3560$ ;  $p < 0.01$ ) as well as for those who were Evangelical Protestants ( $r = -0.3420$ ;  $p < 0.01$ ). Being Evangelical was also positively correlated with attending religious services once a week ( $r = 0.2039$ ;  $p < 0.01$ ) and more than once a week ( $r = 0.4738$ ;  $p < 0.01$ ). Intuitively, having no religious affiliation was positively correlated with never attending services ( $r = 0.7423$ ;  $p < 0.01$ ) and negatively correlated with attending services more than once a week ( $r = -0.5553$ ;  $p < 0.01$ ). Interestingly, being married was positively correlated with attending services more than once a week ( $r = 0.3811$ ;  $p < 0.01$ ) while never having been married was positively correlated with never attending religious services ( $r = 0.1445$ ;  $p < 0.01$ ). Finally, being White was positively associated with never attending religious services ( $r = 0.1953$ ;  $p < 0.01$ ) while being Black was negatively associated with never attending religious services ( $r = -0.2499$ ;  $p < 0.01$ ).

**Bivariate analysis.** Among all men at risk for facilitating unintended pregnancy, approximately 21.6% ( $n = 643$ ) were non-contraceptors, meaning neither they nor their female partner had used contraception at last intercourse. Contraception method use varied by frequency of religious attendance with those men who attend most frequently having higher rates of non-use of contraception than those who attended less frequently. However, this relationship is not

completely linear as non-use of contraception as those who never attend services had higher rates of non-use of contraception (21.8%) than those who attend 1-11 times a year (19.7%) and those who attend once a month (17.9%). The pattern seems to be that non-use of contraception is higher among those who attend services with greater frequency, excepting a spike in non-use of contraception among those who never attend. As displayed in Figure 2, those who attended more than once a week or once a week had higher than average rates of non-use of contraception (29.8% and 24.2%, respectively), while those who attended less than once a week had lower than average non-use of contraception (excepting those who never attend). The association between non-use of contraception and religious service attendance was statistically significant ( $p=0.034$ ).

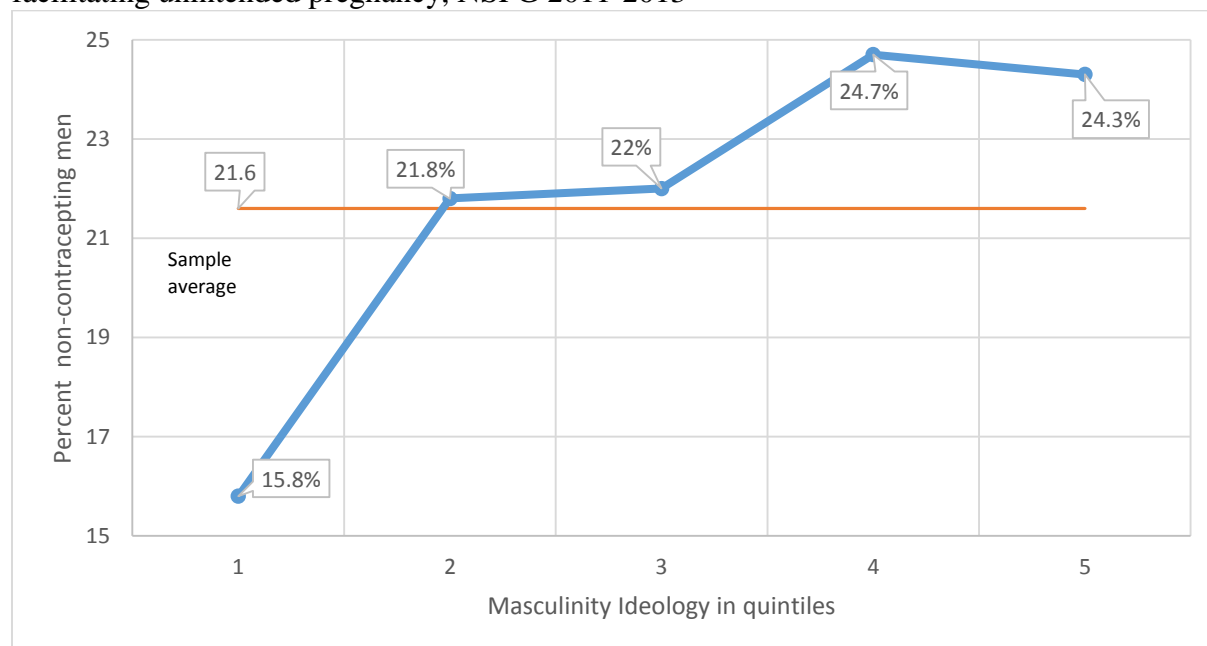
**Figure 2:** Non-use of contraception by religious attendance among men ages 15-44 at risk for facilitating unintended pregnancy, NSFG 2011-2013



As masculinity ideology was hypothesized to be a mediator between non-use of contraception and religious attendance, it was important to examine the bivariate association between masculinity ideology and non-contraception. As noted in Graph 2, the percentage of non-use of contraception among men varies by masculinity ideology. Those who have the lowest levels of masculinity beliefs have lower rates of non-use of contraception while those with

stronger adherence to masculinity beliefs have higher than average rates of non-use of contraception. The association between non-use of contraception and masculinity ideology was statistically significant ( $p=0.001$ ).

**Figure 3:** Non-use of contraception by masculinity ideology among men ages 15-44 at risk for facilitating unintended pregnancy, NSFG 2011-2013



**Three way associations.** Three way cross tabulations were performed to assess the relationship between non-use of contraception and religious attendance by several covariates in order to investigate patterns among the categorical variables. In bivariate chi square tests, all covariates except for religious affiliation were significantly associated with non-use of contraception (see Table 4 in Appendix for complete results). In most associations, the pattern of the higher rates of non-use of contraception by greater frequency in religious service attendance did not hold its statistical significance. The exceptions where the pattern remained statistically significant will be discussed below.

In general, when stratified by religious affiliation, those who attended religious services more than once a week had higher than average non-use of contraception. For example, 31.4% of

Evangelicals and 44.4% of Catholics who attended religious services more than once a week were non-contraceptors, which is drastically higher than the average of 21.6% in the total sample. The only exception to this pattern of higher non-use of contraception was Black Protestants who had lower than average (20.6%) non-use of contraception when attending more than once a week. However, the chi-square test for non-use of contraception difference across religious affiliation was not significant ( $p=0.397$ ). In the three-way cross tabulation, the only group that had significantly different non-use of contraception rates by frequency of religious attendance were those who had no religious affiliation ( $p=0.041$ ).

When stratified by masculinity ideology, the only group who followed the pattern that was found in the bivariate analysis (that non-use of contraception is higher among those who attend religious services at greater frequency, excepting a spike among those who never attend) were those who had the strongest masculinity beliefs ( $p=0.030$ ). Rates of non-use of contraception were highest among those who attended church more than once a week (38.8%) and then tapered off, even dipping below sample average among those who attend 2-3 times a month and once a month (14.4% and 12.1%, respectively) before spiking again to above average rates among those who never attend (26%).

The only other covariate that had statistically significant differences in the proportion of non-contraceptors by religious attendance was when the results were stratified by the participants' mother's highest level of education. Among those whose mother had less than a high school education, those who attended religious services more than once a week had the highest rates of non-use of contraception (33.3%). Those who attended less frequently had lower rates of non-use of contraception, however the only group to have lower than average rates of non-use of contraception were those who attended once a month (7.9%). These differences were

statistically significant ( $p=0.010$ ). Those whose mothers had a bachelor's degree or greater also had statistically significant differences in non-use of contraception by attendance ( $p=0.045$ ).

Those who attended more than once a week had the highest rates of non-use of contraception (40.6%) while all other frequencies of attendance had lower rates of non-use of contraception.

**Regression Models.** Among men at risk for facilitating unintended pregnancy, current religious service attendance was associated in unadjusted models with non-use of contraception (Table 5). Compared with men who only attended services 1-11 times a year, those men who attended services more than once a week had a higher crude odds ratio [OR] for non-use of contraception (OR=1.73; 95% Confidence Interval [CI]=1.20-2.50), indicating that they were 73% more likely to not use contraception ( $p=0.004$ ). Religious affiliation was not associated with non-use of contraception in the unadjusted model, however, the masculinity ideology of men in this sample was found to be associated with non-use of contraception. In the unadjusted regression models, those with stronger adherence to masculinity beliefs had higher odds ratios for non-use of contraception compared to those men with the lowest adherence (OR 1.48, CI 1.12-1.96; OR 1.50, CI 1.12-2.02; OR 1.74, CI 1.32-2.29. OR 1.70, CI 1.32-2.30).

Four multivariate logistic regression models were fit to estimate the unadjusted and adjusted OR of non-use of contraception by religious services attendance (Table 6). A test for collinearity demonstrated collinearity was not a concern among the variables included in the models, as all tolerance values ( $1/VIF$ ) were greater than 0.6. Model 1 examined the odds of non-use of contraception by current religious attendance adjusting for masculinity ideology. In this model, the higher odds of non-use of contraception seen among those who attended religious services more than once a week remained significant, but was decreased from the 1.73 in the unadjusted model to 1.57 (CI 1.08-2.29) in the adjusted model with masculinity ideology. These



results indicate that those who attend more than once a week are 57% more likely to not use contraception than those who attend only 1-11 times a week, when adjusting for masculinity ideology ( $p=0.017$ ). The lower odds ratio in this model indicates that masculinity ideology is a partial mediator, but does not fully mediate the relationship between non-use of contraception and religious service attendance. A likelihood ratio test demonstrated that masculinity ideology significantly contributed to this model ( $p=0.0033$ ).

Model 2 assessed the odds of non-use of contraception by current religious attendance adjusted for masculinity ideology and current religious affiliation. In this model, the OR of non-use of contraception among those who attend service more than once a week was slightly adjusted, but remained significant at 1.53 (CI 1.04-2.25), indicating that those who attend more than once a week are 53% more likely to not use contraception than those who attend only 1-11 times a week when adjusting for masculinity ideology and religious affiliation ( $p=0.030$ ). A likelihood ratio test demonstrated that religious affiliation does not significantly contribute to this model ( $p=0.8627$ ). A separate analysis demonstrated that religious affiliation does not significantly contribute to the religious attendance model even when masculinity ideology is removed ( $p=0.7042$ ).

In Model 3, the odds of non-use of contraception by current religious attendance were adjusted for current religious affiliation, age, marital status, completed pregnancies fathered, and race/ethnicity (masculinity ideology was excluded). With these adjustments, the relationship between non-use of contraception and religious attendance more than once a week was no longer significant (adjusted odds ratio AOR 1.3, CI 0.89-1.99). Similarly, in Model 4, which adjusted for all the variables in Model 3 in addition to masculinity ideology, the relationship between non-use of contraception and religious attendance was also not significant (AOR 1.27, CI 0.85-1.91).

A likelihood ratio test demonstrated that masculinity did not significantly contribute to the full model ( $p=0.0653$ ). However, it is notable that the two strongest levels of masculinity beliefs retained their significantly higher odds of non-use of contraception in this full model (AOR 1.53, CI 1.13-2.06; AOR 1.45, CI 1.05-2.01).

### **Other Findings**

Some unexpected findings that arose during the analysis were notable. For example, in the three-way cross tabulations, those men who have fewer children have lower frequencies of non-use of contraception. This finding seems counterintuitive, as one would think that those who already have multiple children would be more likely to use contraception to prevent further pregnancies as is the case among women (Jones, Mosher, & Daniels, 2012). Similarly, in this data, non-use of contraception was higher for married and cohabitating men while this was the reverse for women – those who were married and cohabitating had lower rates of non-use of contraception (Jones, Mosher, & Daniels, 2012). Furthermore, among women, those in the younger age groups (15-24) had higher than average rates of non-use of contraception while those in older age groups had less than average rate of non-use (Jones, Mosher, & Daniels, 2012), but, among men in this study, the pattern was just the opposite with the youngest age groups having much lower than average rates of non-use while those in older age groups had higher than average. Some similarities among men and women in the rates of non-contraceptors do exist. For example, for both men and women, non-use of contraception was higher among Blacks and lower among Whites. However, whereas Hispanic women had lower than average rates of non-use (Jones, Mosher, & Daniels, 2012), Hispanic men had higher than average rates of non-use.

Another interesting finding was that income level was not significantly correlated with method use, but mother's level of education was. This population being studied includes young men (20-25) and adolescents who might not have a personal income that is reflective of the socioeconomic status of their family of origin. As in the case of other population-level studies that evaluate adolescent's health (Jaccard, Dodge, & Dittus, 2003; Mitchell & Pauls, 2006) mother's educational level could be a better proxy for socio-economic status than income for this population with a wide age range.

## V. Discussion

This study is the first to examine the relationship between men's religiosity and their contraceptive behavior at the population level. It also serves to expand the currently limited evidence linking men's contraceptive use to socio-cultural factors in the United States. A little over a fifth of men in the U.S. of reproductive age who are at risk for facilitating unintended pregnancy are not using contraception. This rate of non-use is higher than what was reported for women of the same age group – 11% (Jones, Mosher, & Daniels, 2012). However, it should be noted that when measuring the 'at-risk' status of women, those who were pregnant or postpartum were excluded from being at-risk, but among men, those whose partners were pregnant or postpartum were still included in the denominator as they still might be at risk for impregnating other women. Despite the differences in measurement, the higher rates of non-use of contraceptive behavior among men compared to women is substantial, especially when considering it is women that these non-contracepting men are having sex with. One way to have a perhaps more accurate comparison between men and women's rates of non-use is to look at non-use rates among those never married and not cohabitating (assuming that this group includes less men whose partners are pregnant or postpartum). Interestingly, among the never married at risk for unintended pregnancy, women's rates of non-use of contraception are higher than average (17.4%) (Jones, Mosher, & Daniels, 2012) while never married men in this study have lower than average non-use (10.2%).

Although there are no comparable data looking at women's contraception non-use by religious attendance, it is notable that the frequency of attendance among men is lower than a comparable sample of women (from 2006-2008 NSFG data) in which 33% of women reported attending religious services at least once a week and only 20% never attend religious services

(Jones & Dreweke, 2011) as compared to 20.2% of men in this sample attending at least once a week and 30.7% reporting that they never attend. The fact that men attend religious services at lower frequencies than women has been found in other research regarding religious attendance and health behavior (Idler et al., 2009).

In the current study, the association between the outcome and the exposure was significant in the bivariate analysis and those with the highest frequency of attendance had a greater likelihood of non-use of contraception in the unadjusted models, which fit with the hypothesis for the first research question. Also, in the first model that adjusted for masculinity ideology, the greater likelihood among those who attended services most frequently decreased, but stayed significant. Although masculinity ideology did not fully mediate the relationship between religious service attendance and non-use of contraception as predicted in the second hypothesis, this decrease in likelihood indicates partial mediation. However, when adjusted for other social and economic factors in the multivariate regression model, the greater likelihood found among those who attended services most frequently lost its significance. Therefore, it is possible that religious attendance might operate through other pathways to influence contraceptive behavior such as marital status or childbearing. When adjusting for factors such as race/ethnicity, marital status, age, and completed pregnancies fathered, non-use of contraception did not significantly vary by religious attendance, however, it did vary significantly by masculinity ideology.

Consistent with findings from smaller studies (Pleck et al., 1993; Marsiglio, 1993), strong adherence to dominant masculinity ideology was associated with non-use of contraception. Even when adjusting for other socio-cultural factors such as age, religious affiliation, marital status, completed pregnancies fathered, and race/ethnicity, those with stronger adherence to dominant

masculinity ideology were more likely to not use contraception. Those with the highest adherence to dominant masculinity ideology were 45% more likely than those in the lowest group to not use contraception when adjusting for religious variables, marital status, age, number of completed pregnancies fathered, and race/ethnicity. However, these results should be interpreted with caution given the low Cronbach Alpha score of the masculinity ideology scale, which leaves room for more random error.

Similar to results found among adult women at risk for unintended pregnancy (Kramer et al., 2007), adult men's non-use of contraceptive behavior did not vary significantly by current religious affiliation when adjusting for other socio-cultural factors. Whereas the Kramer et al. (2007) study of women found religious affiliation to be significant in the unadjusted models, this current study with men did not. Furthermore, this study did not find religious affiliation to be a predictor of non-use of contraception among adolescent men, as Kramer et al. (2007) had found to be true among adolescent women.

Factors that were found to be associated with non-use of contraception in the multivariate models included marital status, number of pregnancies fathered, age, and race/ethnicity. Those men who were previously married or never married were less likely to be non-users of contraception than those who were currently married. These findings are contrary to what Kramer et al. (2007) found regarding women where in a similarly adjusted model, women who were never married or previously married were more likely to be non-users of contraception. In this current study, those men who fathered three or more completed pregnancies were less likely to be non-users of contraception than those who had only one pregnancy and adolescents were less likely to be non-users than men ages 30-34 when adjusting for other socio-cultural factors. Finally, Non-Hispanic Black men and Non-Hispanic men from multiple races were more likely

than Non-Hispanic White men to be non-users, which is similar to findings among women of various racial and ethnic background (Kramer et al., 2007).

### **Conclusion and Recommendations**

To address the high rates of unintended pregnancy in the United States, it is necessary not only to address the socio-cultural factors that affect women's contraception non-use, but also those that influence men's non-use. Theorists, researchers, and practitioners have been calling for more research focused on men's role in reproductive decisions for over two decades (Pleck et al., 1993; Marsiglio, 1993; Edwards, 1994; Sable & Libbus, 1998; Greene & Biddlecom, 2000; Stanelli, et al, 2003). This study is an initial attempt to include men's public religious behavior in the literature that examines socio-cultural factors related with non-use of contraception. It is recommended that longitudinal and sub-population studies be conducted to assess the consistency of the cross-sectional findings here. Having a better understanding of factors associated with contraception non-use can help inform policies and interventions that aim to reduce the high rates of unintended pregnancies in the U.S.

Despite religion's prominent role in public debates about sexual and reproductive health, it seems that individual level religiosity (as measured by attendance) does not significantly contribute to men's non-use of contraception when adjusting for other socio-cultural factors. However, masculinity ideology - which in this study and others (Whitehead, 2012) was significantly associated with religiosity - does in fact significantly contribute to men's contraception non-use. While the data set used in this study did not permit the exploration of gender dynamics in decisions about contraceptive use between heterosexual partners, other studies have found that strong adherence to traditional or hegemonic masculinity is correlated with controlling or even violent behavior in intimate relationships (Jakupcak, Lisak, & Roemer,

2002). In turn, intimate partner violence (IPV) is associated with unintended pregnancy (Miller et al., 2014). Further research is recommended to evaluate if masculinity ideology mediates the relationship between IPV and unintended pregnancy. Furthermore, in order to address both IPV and non-use of contraception, it is recommended that the curriculum of sexual education in schools and reproductive health interventions in communities include discussions regarding the influence of masculinity ideology.

Of particular concern is the lower rates of contraceptive use among those from lower socio-economic (SES) backgrounds and among racial/ethnic minority groups. Although strong masculinity beliefs was positively correlated with both of these factors, adhering to dominant masculinity beliefs cannot fully explain the higher rates of contraception non-use among those from lower SES backgrounds and racial/ethnic minority groups as the greater likelihood of non-use remained significant even when controlling for masculinity ideology in the multivariate model. As contraception use among women is greatly affected by availability and cost (Liffander, et al., 2006; Biggs, Karasek, & Foster, 2012), their male partners may face similar challenges. Promotion of public policy that makes contraception more available and accessible to men and women may attenuate the effect of socio-economic status on non-use of contraception.



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## Appendix

<b>Table 1:</b> Items selected for masculinity ideology scale from 2011-2013 NSFG and comparative item from MRNI-R (Levant et al., 2007)	
<b>2011-2013 NSFG Item</b>	<b>Comparison in MRNI-R</b>
JG-3 Sexual relations between two same-sex adults are all right	1. Homosexuals should never marry 25. Homosexuals should never kiss in public. 8. All homosexual bars should be closed down. 18. Men should never compliment or flirt with another male. 32. A man should not continue a friendship with another man if he finds out that the other man is homosexual.
JG -8 Okay for unmarried woman to have and raise a child	22. A man should provide the discipline in the family. 44. A man should always be the major provider in his family.
JG -9 Gay adults should have the right to adopt children	1. Homosexuals should never marry 37. Homosexuals should be barred from the teaching profession.
JG -19a Men have greater sexual needs than women	28. Men should always take the initiative when it comes to sex. 16. Men should always like to have sex. 40. A man shouldn't bother with sex unless he can achieve an orgasm. 24. It is ok for a man to use any and all means to "convince" a woman to have sex
JG -19b Men only need to see a doctor when they are hurt or sick	4. A man should be able to perform his job even if he is physically ill or hurt 45. When the going gets tough, men should get tough
JG -19c A man should not show pain	31. A man should not react when other people cry. 38. A man should never admit when others hurt his feelings.

<b>Table 2: Sample Demographics of men ages 15-44 at risk for facilitating unintended pregnancy (n=2,980), NSFG 2011-2013</b>		
	Frequency (Number)	Percent of Total
Total	2,980	100
<b>DV: Method Use</b>		
Method Used	2,337	78.4
No Method Used	643	21.6
<b>IV: Religious Attendance</b>		
Never	915	30.7
1-11 times a year	919	30.8
Once a month	223	7.5
2-3 times a month	333	11.2
Once a week	422	14.6
More than once a week	168	5.6
<b>Covariates:</b>		
Adherence to Dominant Masculinity Ideology		
1 – Low	638	21.4
2	676	22.7
3	527	17.7
4	665	22.3
5 – High	474	15.9
Religious Affiliation		
Evangelical	529	17.8
Mainline	384	12.9
Black Protestant	441	14.8
Catholic	672	22.6
Other Religion	209	7.0
None	745	25.0
Age in 5 year age groups		
15-19	359	12.0
20-24	515	17.3
25-29	599	20.1
30-34	566	19.0

35-39	458	15.4
40-45	483	16.2
<b>Marital Status</b>		
Married	1,034	34.7
Cohabiting	475	15.9
Previously Married	248	8.3
Never Married	1,223	41.0
<b>Completed Pregnancies Fathered</b>		
Zero	1,168	39.2
One	569	19.1
Two	505	17.0
Three or more	758	24.8
<b>Household Income</b>		
Below poverty line	667	22.4
199% of poverty line	648	21.7
299% of poverty line	537	18.0
300%+ of poverty line	1,128	37.9
<b>Mother's Highest Level of Education</b>		
Less than HS	625	21.0
HS or GED	1,059	35.5
Some College	659	22.1
Bachelor's degree+	576	19.3
.	61	2.1
<b>Race/Ethnicity</b>		
Hispanic	716	24.0%
NH White	1,423	47.8%
NH Black	602	20.2%
NH Other	239	8.0%

<b>Table 3:</b> Pairwise estimates of tetrachoric correlations of covariates by non-use of contraception and religious attendance among men ages 15-44 at risk for facilitating unintended pregnancy (n=2,980), NSFG, 2011-2013							
	Non-use of contraception	Never Attend	1-11 times a year	Once a month	2-3 times a month	Once a week	More than once a week
<b>Characteristic:</b>	-	0.0051	-0.0569	-0.0685	-0.0051	0.0547	0.1288*
Non-use of contraception							
Adherence to Dominant Masculinity ideology							
1 – Low	-0.1513**	<b>0.194***</b>	0.1002*	0.0418	<b>-0.2116***</b>	<b>-0.2432***</b>	<b>-0.3223***</b>
2	0.0043	0.0825*	0.0487	-0.0046	0.0027	-0.1352*	-0.1776*
3	0.0101	-0.0290	-0.0167	-0.0418	0.0535	0.0193*	0.0579
4	0.0770*	-0.1151*	-0.0978*	0.0176	0.0670	<b>0.1767***</b>	0.1247*
5 – High	0.0588	<b>-0.1886***</b>	-0.0485*	-0.0246	0.0767	0.1532*	<b>0.2229***</b>
Religious Affiliation							
Evangelical	0.0513	<b>-0.3420***</b>	-0.0713*	-0.0146	0.0710	<b>0.2039***</b>	<b>0.4738***</b>
Mainline	-0.0666	<b>-0.1974***</b>	0.1546**	0.1066*	0.0572	-0.0392	-0.1030
Black Protestant	0.0238	<b>-0.3560***</b>	-0.0544	0.1644*	<b>0.2481***</b>	0.1523*	0.1074*
Catholic	-0.0231	<b>-0.2688***</b>	<b>0.1503***</b>	0.1378*	0.0679	0.1406*	<b>-0.3755***</b>
Other Religion	0.0408	-0.1444*	0.0388	0.0234	0.0337	0.0045	0.1682*
None	-0.0136	<b>0.7423***</b>	<b>-0.1783***</b>	<b>-0.4735***</b>	<b>-0.5152***</b>	<b>-0.5455***</b>	<b>-0.5553***</b>
Age in 5 year age groups							
15-19	<b>-0.3742**</b>	0.0131	-0.0468	0.0686	0.0249	0.0160	-0.0666
20-24	<b>-0.1731**</b>	0.1334*	-0.0560	0.1078*	-0.0992*	-0.0599	-0.1430*
25-29	0.0902*	0.0037	0.0744*	0.0015	-0.0579	-0.0425	-0.0751
30-34	0.0615	-0.0527	0.0121	-0.0769	0.0796	-0.0064	0.0834
35-39	0.1251*	-0.0516	0.0151	-0.0773	-0.0474	0.0619	0.1368*
40-45	0.1110*	-0.0525	-0.0193	-0.0311	0.0889*	0.0394	0.0210



Marital Status							
Married	<b>0.3057***</b>	<b>-0.2038***</b>	-0.0751*	-0.1020*	0.0819*	<b>0.2042***</b>	<b>0.3811***</b>
Cohabiting	0.1324*	0.0280	0.0714	0.0605	-0.0689	-0.0141	<b>-0.3511***</b>
Previously Married	0.0036	0.0662	0.0700	-0.0764	0.0146	-0.1311*	-0.1630*
Never Married	<b>-0.4070***</b>	<b>0.1445***</b>	-0.0028	0.0813	-0.0441	-0.1498**	-0.1904*
Completed Pregnancies							
Fathered							
Zero	<b>-0.227***</b>	0.1264**	0.0563	-0.0149	-0.1054*	-0.0804*	<b>-0.2377***</b>
One	0.0907*	0.0010	0.0158	0.0037	-0.0169	0.0132	-0.0575
Two	0.1381*	-0.0040	-0.0294	-0.0075	-0.0030	0.0029	0.1035
Three or more	0.0668	<b>-0.1569***</b>	-0.0597	0.0206	0.1350*	0.0804*	0.2063**
Household Income							
Below poverty line	-0.0267	-0.0026	-0.0799*	0.0471	0.0145	0.0707	0.0234
199% of poverty line	-0.0110	-0.0129	-0.0157	0.0357	0.0330	-0.0297	0.0234
299% of poverty line	0.0136	-0.0178	-0.0241	-0.0017	-0.0343	0.0552	0.0438
300%+ of poverty line	0.0199	0.0242	0.0899*	-0.0660	-0.0142	-0.0746*	-0.1089*
Mother's Highest Level of Education							
Less than HS	0.1156*	-0.0197	-0.0901*	0.0654	0.0547	0.0582	0.0378
HS or GED	0.0199	0.0582	-0.0015	-0.0732	0.0267	-0.0485	-0.0378
Some College	-0.1335**	-0.0302	0.0057	0.0891	-0.0716	0.0184	0.0375
Bachelor's degree+	-0.0180	-0.0417	0.0865*	-0.0736	0.0105	-0.0364	-0.0051
Race/Ethnicity							
Hispanic	0.0347	-0.0616	-0.0271	0.0837	0.0280	0.0821*	-0.0526
NH White	-0.0837*	<b>0.1953***</b>	0.0745*	-0.1658*	<b>-0.1698***</b>	-0.1454**	-0.0688
NH Black	0.0286	<b>-0.2499***</b>	-0.0570	0.0953*	<b>0.2029***</b>	0.1245*	0.1357*
NH Other	0.0911*	0.0482	-0.0370	0.0617	-0.0330	-0.0398	0.0103
*Indicate correlations that are statistically significant at $\alpha \leq 0.05$ level							
** Indicate correlations that are statistically significant at $\alpha \leq 0.05$ level after the Bonferroni adjustment							
***Indicate correlations that are statistically significant at $\alpha \leq 0.01$ after the Bonferroni adjustment							

<b>Table 4:</b> Percentage of noncontraceptors among men ages 15-44 at risk for facilitating unintended pregnancy (n=2,980), by religious attendance and select demographic covariates, NSFG, 2011-2013								
	Total	Never	1-11 times a year	Once a month	2-3 times a month	Once a week	More than once a week	X <sup>2</sup> p-value
Total	21.6	21.8	19.7	17.9	21.3	24.2	29.8	0.034*
<b>Characteristic</b>								
<b>Religious Affiliation</b>								
Evangelical	23.8	23.4	27.1	18.4	18.6	19.3	31.4	0.258
Mainline	18.5	15.6	19.5	15.4	18.0	20.4	26.7	0.904
Black Protestant	22.7	22.4	18.7	21.6	25.3	27.3	20.6	0.757
Catholic	20.7	24.6	19.1	13.0	19.5	23.2	44.4	0.176
Other Religion	23.9	24.4	15.7	23.5	26.9	30.0	38.1	0.341
None	21.1	21.4	16.9	33.3	23.1	50.0	-	0.041*
	p=0.397							
<b>Adherence to Dominant Masculinity Ideology</b>								
1 – Low	15.8	16.7	14.0	18.9	10.0	16.7	36.4	0.766
2	21.8	23.1	19.2	20.0	22.4	22.9	31.8	0.604
3	22.0	19.5	22.8	22.9	29.9	20.5	17.1	0.184
4	24.7	27.2	20.0	15.4	24.4	30.3	27.5	0.030*
5 – High	24.3	26.0	26.2	12.1	14.1	23.4	38.8	
	p=0.001							
<b>Age in 5 year age groups</b>								
15-19	6.7%	8.9	7.9	6.1	4.7	3.7	0	0.659
20-24	14.6%	18.0	10.4	9.8	9.1	20.6	16.7	0.173
25-29	25.4%	23.8	22.7	22.2	27.6	33.7	33.3	0.394
30-34	24.2%	22.0	24.7	26.5	26.3	20.3	32.5	0.716
35-39	27.5%	27.3	24.1	22.2	33.3	28.0	36.8	0.602

40-45	26.7% p<0.001	29.6	22.2	24.2	20.9	32.0	37.9	0.281
Marital Status								
Married	31.6%	33.8	29.0	27.4	27.8	32.7	39.1	0.328
Cohabiting	27.8%	28.1	29.1	19.1	27.3	29.2	33.3	0.861
Previously Married	21.8%	26.4	14.8	42.9	17.2	21.7	28.6	0.166
Never Married	10.6% p<0.001	12.0	9.6	8.6	13.4	9.6	6.7	0.606
Completed Pregnancies								
Fathered								
Zero	15.3%	16.8	14.1	9.4	14.8	17.9	16.2	0.514
One	25.5%	25.1	23.9	23.2	23.0	30.1	33.3	0.794
Two	27.9%	27.9	27.7	18.9	30.4	30.6	29.0	0.859
Three or more	24.1% p<0.001	24.43	20.67	25.86	22.22	23.77	36.36	0.215
Mother's Highest Level of Education								
Less than HS	26.4	32.3	24.7	7.3	27.9	25.0	33.3	0.010*
HS or GED	22.2	19.8	22.7	23.5	19.4	29.0	21.8	0.356
Some College	16.5	15.0	13.7	18.0	21.0	17.5	26.8	0.332
Bachelor's degree+	20.8 p<0.001	21.2	16.8	25.7	16.7	24.0	40.6	0.045*
Race/Ethnicity								
Hispanic	22.9%	23.5	24.5	13.9	22.4	21.0	34.3	0.287
NH White	19.5%	20.0	17.2	16.5	16.5	23.3	31.0	0.069
NH Black	22.8%	22.6	17.8	22.8	23.3	27.3	29.2	0.423
NH Other	26.8% p=0.036	27.2	26.5	22.7	33.3	30.0	14.3	0.850
<p>* 'At risk for facilitating unintended pregnancy' refers to all men, not seeking pregnancy with partner, who have had intercourse in the three months prior to interview.</p> <p>** Non-contraceptors refer to men who reported no contraceptive use at last intercourse</p> <p>*** Chi-square p-value refers to the hypothesis test that percentages of non-contraceptors are similar across religious attendance</p>								

<b>Table 5:</b> Crude odds ratios (ORs) for non-contraception among men ages 15-44 at risk for facilitating unintended pregnancy (n=2,980), by measures of religiosity and masculinity ideology NSFG 2011-2013		
	Crude OR	95% Confidence Interval
<b>Religious Attendance</b>		
Never	1.13	0.90 - 1.42
*1-11 times a year	-	-
Once a month	0.89	0.61 - 1.30
2-3 times a month	1.10	0.81 - 1.50
Once a week	1.30	0.99 - 1.71
More than once a week	1.73	1.20-2.50
<b>Religious Affiliation</b>		
Evangelical	1.38	0.99 - 1.91
*Mainline	-	-
Black Protestant	1.29	0.92 - 1.82
Catholic	1.15	0.84 - 1.58
Other Religion	1.39	0.92 - 2.09
None	1.18	0.86 - 1.61
<b>Adherence to Dominant Masculinity Ideology</b>		
*1 – Low	-	-
2	1.48	1.12 - 1.96
3	1.50	1.12 - 2.02
4	1.74	1.32 - 2.29
5 – High	1.70	1.26 – 2.30
*Indicates referent group		

**Table 6:** Adjusted odds ratios (AORs) for non-contraception among men ages 15-44 at risk for facilitating unintended pregnancy (n=2,980), NSFG 2011-2013

Characteristic:	Model 1 Attendance and Masculinity		Model 2 Attendance, Masculinity, and Religious Affiliation		Model 3 Attendance, Religious Affiliation and Covariates		Model 4 All variables	
	OR	CI	OR	CI	OR	CI	OR	CI
Religious Attendance								
Never	1.15	0.92-1.45	1.14	0.89-1.46	1.29	0.99-1.66	1.28	0.99-1.66
*1-11 times a year	-	-	-	-	-	-	-	-
Once a month	0.88	0.60-1.29	0.88	0.60-1.29	0.93	0.624-1.37	0.93	0.63-1.38
2-3 times a month	1.04	0.76-1.42	1.04	0.76-1.42	1.01	0.73-1.39	0.98	0.70-1.35
Once a week	1.21	0.92-1.60	1.20	0.91-1.59	1.10	0.82-1.47	1.05	0.78-1.41
More than once a week	1.57	1.08-2.29	1.53	1.04-2.25	1.32	0.89-1.99	1.27	0.85-1.91
Adherence to Dominant Masculinity Ideology								
*1 – Low	-	-	-	-			-	-
2	1.47	1.10-1.94	1.46	1.10-1.93			1.39	1.04-1.86
3	1.46	1.08-1.97	1.45	1.08-1.97			1.35	0.99-1.85
4	1.68	1.27-2.23	1.67	1.26-2.22			1.53	1.13-2.06
5 – High	1.63	1.20-2.22	1.61	1.18-2.20			1.45	1.05-2.01
Religious Affiliation								
Evangelical			1.18	0.84-1.65	1.25	0.89-1.77	1.19	0.84-1.68
*Mainline			-	-	-	-	-	-
Black Protestant			1.16	0.82-1.64	1.25	0.78-2.01	1.22	0.76-1.97
Catholic			1.12	0.82-1.55	1.07	0.76-1.51	1.06	0.76-1.50
Other Religion			1.31	0.87-1.98	1.038	0.66-1.62	1.03	0.66-1.61
None			1.16	0.83-1.62	1.16	0.82-1.65	1.18	0.83-1.68
Age								
15-19					0.44	0.26-0.72	0.42	0.26-0.70
20-24					0.79	0.56-1.11	0.79	0.56-1.11

25-29					1.19	0.90-1.57	1.19	0.90-1.58
*30-34					-	-	-	-
35-39					1.13	0.84-1.50	1.13	0.84-1.15
40-45					1.07	0.80-1.423	1.07	0.81-1.44
Marital Status								
*Married					-	-	-	-
Cohabiting					0.80	0.62-1.04	0.79	0.61-1.03
Previously Married					0.59	0.42-0.83	0.59	0.42-0.82
Never Married					0.28	0.21-0.38	0.28	0.21-0.38
Completed Pregnancies								
Fathered								
Zero					0.86	0.65-1.12	0.88	0.67-1.15
*One					-	-	-	-
Two					0.87	0.66-1.16	0.85	0.64-1.13
Three or more					0.68	0.51-0.88	0.67	0.52-0.89
Race/Ethnicity								
Hispanic					1.37	1.08-1.75	1.32	1.04-1.70
*NH White					-	-	-	-
NH Black					1.69	1.18-2.42	1.61	1.12-2.32
NH Other					1.81	1.20-2.73	1.75	1.16-2.64

\*Indicates referent group

Model 1 – Odds of non-use of contraception by current religious attendance adjusted for masculinity ideology. Likelihood ratio test demonstrated that masculinity significantly contributed to this model LRchi2(4)=15.81 p=0.0033

Model 2 – Odds of non-use of contraception by current religious attendance adjusted for masculinity ideology and current religious affiliation. Likelihood ratio test demonstrated that religious tradition does not significantly contribute to this model p=0.8627. Religious tradition does not contribute to attendance model even when masculinity is removed p=0.7042

Model 3 – Odds of non-use of contraception by current religious attendance adjusted for current religious affiliation, age, marital status, completed pregnancies fathered, race/ethnicity [masculinity excluded].

Model 4 - Odds of non-use of contraception by current religious attendance adjusted for masculinity ideology, current religious affiliation, age, marital status, completed pregnancies fathered, race/ethnicity. Likelihood ratio test demonstrated that masculinity does not significantly contribute to full model (p=0.0653)

A test for collinearity demonstrated no need to address multicollinearity – all tolerance values (1/VIF) were above 0.6