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Religion, Religiosity, and Contraceptive Method Choice

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September 25, 2013

INTRODUCTION

For two centuries the world has been focused on an explosion in population growth. Following the publication of "An Essay on the Principle of Population, as it Affects the Future Improvement of Society" by Thomas Matlhus (1798) demographers and politicians alike have been enamored by the threat of overpopulation. Despite what many might still argue today, the continued threat of overpopulation is somewhat debatable. Nonetheless, Malthus set in motion a series of events that still haunts population policies around the globe. The success of the international contraceptive movement can be greatly attributed to the population scare created by Malthus and his later collaborators such as Ehrlich (1968).

Furthermore, until recent history religious doctrine was crucial in encouraging large families. Most religious groups emphasized the blessing of children and even defined sexual intercourse as a necessary evil for the purpose of procreation (Tobin 2001). Yet, at the beginning of the 20th century things began to change. Following the Lambeth Conference in 1930 many of the Christian denominations that once stood with the Catholic Church in opposition to contraception began to shift their stance on the issue (Tobin 2001). The Lambeth conference is a decennial conference of Anglican bishops and a few other affiliated denominations that is called by the Archbishop of Canterbury. It was at the 1930 conference that the bishops voted to allow for limited use of contraception. However, the fallout from this conference is much the same as experienced by Catholics following *Human Vitae* in 1968. In effect, the Lambeth conference of 1930 marks the turning point for a large number of protestant churches in regards to their formal doctrinal stance on contraception (Tobin 2001). Thus, at this tumultuous moment in history, with the advent of the birth control movement and modern contraceptive methods, the fear of population growth, and tremendous social and political tensions contraceptive use began to rise.

The movement accelerated with the development of new reliable forms of birth control in the 1950's. Understandably, the fear of overpopulation was not completely unfounded but at times perhaps overstated. Nevertheless, the combination of aggressive population goals and access to effective contraception further complicated global population policy. While the modern developed countries took a century or more to reach desirable fertility levels, new developing countries were expected to accomplish the same feat overnight. Such aggressive policy coupled with a potential lack of foresight may have created a more serious problem, namely, declining populations.

Currently, some demographers are beginning to notice a new disturbing trend, population decline. From Europe to Asia to the Americas, numerous countries now face extremely low fertility rates. The consequences of extremely low fertility rates could be disastrous for a number of social and political structures and institutions. For example, low fertility and low mortality rates in developed countries can lead to population aging implying that at some point the elderly population in need of care will far exceed the number of working age adults. Such an imbalance will create problems in healthcare, the economy, agriculture, politics, and so on. Some countries today are trying to implement pronatalist policies with virtually no success. If current trends continue, many more countries will also be forced to attempt some form of pronatalist policies. But the question remains, why study contraception and religion?

Since religion and religious beliefs played such an important role at the start of the birth control movement it is possible that such beliefs and behaviors may become important once again. As noted above, before the advent of modern contraceptives religious doctrine was often the determining factor in family size. Prior to the Enlightenment, religion served as the single source of authority. Yet, after the enlightenment and throughout the industrial revolution, at least

in the western world, human reason began to challenge religious authority through the process of what is often referred to as secularization (Berger 1967; Bruce 2002; Casanova 1994). It is the triumph of human reason over religious belief that ultimately leads to the permissibility of contraceptive use at the Lambeth Conference in 1930. Even in traditions that still oppose contraception such as Catholicism great rifts have developed in the past fifty years based on the primacy of the individual conscience and human reason as opposed to centuries of Church doctrine. Therefore, a decline in religious authority or at minimum a shift in religious beliefs helped spread the gospel of contraception. Contraception then in turn played a pivotal role in rapidly decreasing fertility rates in countries across the globe. Now, with the looming crisis of population decline on the horizon, the concern may be how to scale back contraceptive use in order to achieve replacement levels of fertility. Finally, since religion played a role in the explosion of contraception, religion may be called on to once again to limit contraceptive use. Therefore, it is important to understand how religion and other factors influence an individual's preferred contraceptive method.

The second reason I am interested in contraception stems from the fact that I don't believe we adequately understand the consequences of separating the sexual act from procreation. There are obvious moral and theological considerations involved in this argument but as a social scientist I am interested in the more observable physical and relational ramifications coming out of contraceptive use. The known links between various hormonal contraceptives, sterilization procedures, abortion to incredibly high rates of cancer, mental health, and ultimately death is astounding. The fact that most of such research is funded by the same pharmaceutical companies producing the contraceptives and still finds dangerous connections makes one wonder how much more serious the problem may be in an unbiased

setting. Of course, some social scientist have also looked at the consequences of increased contraception use on the status of women and their power within relationships (Akerlof, Yellen, and Katz 1996). I fear that the contraceptive mentality has further objectified women.

Lastly, and perhaps most importantly, the future population scare will not be growth but decline. Understanding the consequences associated with population decline is still in infancy. The real cost of declining population could be much worse than we currently perceive. Where overpopulation was corrected in many instances in a matter of years, low fertility rates have proven to be resistant to numerous policy and economic corrections. If low fertility rates can be reversed the process will likely take generations and not just a few years. The rapid fertility decline would not have been possible without modern contraceptives but there is currently now cure for low fertility. Thus, I think gaining a fuller understanding of contraceptive use will be crucial if the time ever comes when we need to persuade users to limit or drop the use altogether.

REVIEW OF THE LITERATURE

CONTRACEPTIVE METHOD CHOICE

A number of social, economic, and demographic factors have been identified as important predictors of contraceptive use versus non-use as well as use of particular contraceptive methods. Education and income have consistently been important in explaining method choice among contraceptive users. Some researchers have found that low income women with only a high school education are more likely to use long-acting forms of contraceptives (high efficacy) and condoms (low efficacy) than white women with a college degree (Frost and Darroch 2008). Income on the other hand often implies access to private healthcare in which women possessing some form of private health care coverage are more likely than women with

no healthcare or state funded health care to utilize the pill (Frost and Darroch 2008). Both of these trends are often explained by the fact that publicly funded family planning agencies tend to distribute long-acting methods or condoms while private insurance plans subsidize the birth control pill. Therefore, women from low income minority groups are more likely to utilize the longer-acting contraceptives because that is often what is offered at non-profit and state funded clinics.

The experience of an unintended pregnancy also predicts contraceptive method choice. Women who had encountered an unintended pregnancy were more likely to use long-acting contraceptives than women who had not had an unintended pregnancy (Frost and Darroch 2008). Furthermore, those women that have not experienced an unintended pregnancy were much more likely to use condoms and to use condoms inconsistently (Frost and Darroch 2008; Shih, Vittinghoff, Steinauer, and Dehlendorf 2011). Relationship status and age were also factors of method choice. Unmarried women were are likely to choose condoms than married women and women age 35 and older were are more likely to use withdrawal or periodic abstinence than younger age groups (Frost and Darroch 2008).

Another predictor of contraceptive method choice is race (Abma, Martinez, Mosher, and Dawson 2004; Frost and Darroch 2008; Shih et al. 2011). Among women at risk for pregnancy in California one study found that even after controlling for multiple demographic and socioeconomic variables minority groups such as blacks and foreign born Asians were slightly less likely to use the most effective contraceptive methods compared to whites (Shih et al. 2011). However, blacks and Hispanics were more likely to use female sterilization than whites, and blacks and foreign born Asians were more likely to use male sterilization than whites (Shih et al. 2011). Sterilization was also related to income with men from higher socioeconomic classes and

higher parity more likely to use male sterilization. The researchers concluded that differences in method choice by race and ethnicity were likely due to variation in knowledge of the different contraceptive methods as well as a lack of method counseling (Shih et al. 2011). However, other researchers have noted that personal preference as well as system level factors may also be important. For example, Black and Hispanic may be more likely to prefer sterilization but often times the insurance companies influence choice through counseling and avenues of access (Borrero, Schwarz, Reeves, Bost, Creinin, and Ibrahim 2007). Furthermore, race has been found as a major predictor of a doctor's willingness to perform tubal sterilizations (Borrero et al. 2007). Plus, minorities typically have less access to private healthcare that may offer more options in terms of contraception. Nevertheless, even when controlling for health care provider race and ethnicity are still significant.

Finally, a recent study employing multilevel multinomial regression models found that relationship qualities are significant predictors of contraceptive method choice net of individual characteristics and prior experiences (Kusunoki and Upchurch 2011). This particular study notes that individual method choice varies from one relationship to the next such that the same individual may use a different method based on contextual factors such as relationship seriousness, relationship duration, if the partner/spouse is of the same or different race, and a number of other factors (Kusunoki and Upchurch 2011). Thus, it is important to consider multiple levels of influence. Unfortunately, multilevel analysis is beyond the scope of this particular project but important nonetheless.

This brief literature review has demonstrated that race, education, income, age, and relationship status are all important predictors of contraceptive method choice. The following

analysis will include all of these variables as controls. However, the focus of this project is how religiosity and religious affiliation impact contraceptive method choice.

Religiosity and Contraception

The literature on religiosity and contraception is not as robust as one may think. However, there are a few quality studies that include religiosity as a main independent variable. Several other studies include limited measures of religiosity but mainly as an afterthought with little attention paid to measurement or interpretation of the results dealing with religiosity.

There are only a few studies so far that have identified a positive relationship between religiosity and contraceptive use. Miller (2002) found the frequent participation in religious services and involvement with a religious community were positively correlated with use of birth control. Miller (2002) hypothesized that religiosity was correlated with "greater foresight" regarding the contraction of HIV and unplanned pregnancy, which led to a more "responsible and planned use" of contraception (Miller 2002:404). In a review of the literature Rostosky (2004) also found that higher levels of church attendance correlated with a decreased likelihood of non-contracepted sexual intercourse. However, Rostosky (2004) ultimately concluded that the literature regarding religiosity and contraceptive use was too limited with too many conflicting results to provide an adequate interpretation just yet. Other authors have also found that religiosity may correlate with certain types of contraceptive use. For example, in one study religiosity among Catholics was significantly related to increased use of rhythm, male sterilization, and male condom use (Goldscheider and Mosher 1991). Up to this point, however, religiosity has been regarded as a single dimension tending to focus on religious service attendance. Some researchers have divided religiosity into public and private dimensions and found some interesting results.

Private religiosity and public religiosity may in fact differentially affect contraceptive behavior. Nonnemaker and colleagues (2003) found that both private and public religiosity were associated with decreases in sexual behavior but public religiosity was much more important. In addition, only public religiosity was significantly related to contraception (Nonnemaker et al. 2003). Plus, these researchers also found that public religiosity was only related to contraceptive use at first sex but when applied to current contraceptive use the relationship was no longer significant. These results led the researchers to conclude that religiosity may have had an impact initially yet once the behavior began religiosity no longer played a role. This has been referred to as the religiosity adaptation hypothesis (Meier 2003). The hypothesis states that religiosity will fluctuate or adapt to current behavioral patterns. However, Meier (2003) found that first sex does not impact overall levels of religiosity, which contradicts the religiosity adaptation hypothesis. Furthermore, some authors have claimed that religiosity shares a bi-directional relationship with sexual and contraceptive behavior (Hardy and Raffaelli 2003). However, Hardy and Raffaelli (2003) ultimately found the relationship to only work in one direction. Adolescents with high levels of religiosity were less likely to engage in sexual behavior but the sexual activity failed to predict religiosity. While these articles have found modest support for a positive relationship between religiosity and contraception much of the literature suggests the opposite.

Alternatively, researchers have found either no relationship or a negative relationship between religiosity and contraceptive use. Studer and Arland (1987) found that individuals who attend church more frequently were less likely to use contraception than those who don't participate in religious services. This relationship was maintained even after incorporating extensive controls in the model. Similarly, Brewster, Cooksey, Guilkey, and Rindfuss (1998) found no significant relationship between religiosity and contraception and even though non-

significant the two were negatively related. Likewise, Leonard and Scott-Jones (2010) found no relationship between religiosity and contraceptive use. These authors did point out however, that the majority of their sample (high school seniors) did report to be sexually active while simultaneously reporting that religion was important in their lives. In fact when the subjects were asked about what exactly they consider before engaging in sexual activity virtually none mentioned religion (Leonard and Scott-Jones 2010). In fact the majority of respondents cited the quality of the relationship or fear of pregnancy as the greatest concerns for the transition into sexual activity. However, the authors cautioned that the limiting sample size may have impacted their ability to obtain appropriate levels of statistical power.

Finally, Cerqueira-Santos (2008)analyzed the relationship between religiosity and sexual behaviors among low income adolescents in Brazil and found that high levels of religiosity were modestly correlated with higher ages at first sex but negatively related to contraceptive use. These results imply religion acts as a gatekeeper to sexual activity but once again when the individual engages in such activity religiosity ceases to become important. The authors also mentioned that the results could be attributed to differences in culture. According to the researchers religion in America tends to be associated with traditional values on sexual behavior and self-identification as non-religious is more acceptable. However, in Brazil everyone identifies as religious but levels of private religiosity are presumably quite low. Therefore, although Brazil is nearly entirely Catholic "the manner in which religion is lived in Brazil…does not presuppose, necessarily, the rigid adhesion to rules and behavioral conduct" (Cerqueira-Santos 2008:100)

Religious Affiliation and Contraception

Most of the existing research has identified some level of variation in contraceptive styles among various religious groups (for opposing position see Brewster et al. 1998). Since many of these groups vary in the approach to contraception, either condoning or condemning contraception, then it is reasonable to assume that rates of use will vary by contraceptive type as well. Even just being raised in a particular religion decreases the likelihood of contraceptive use (Raine, Minnis, and Padian 2003).

For example, one study found that religious groups that tend to delay age at first sex are less likely to use any form of contraception (Cooksey, Rindfuss, and Guilkey 1996). More specifically the researchers found that Black Protestants were the least likely to use any form of contraception (Cooksey et al. 1996). This is interesting since Black parents reportedly discuss sex and contraception with their children more frequently and with greater ease than any other race or ethnicity (Regnerus 2005). Similarly, parent in religious groups that oppose contraceptive use such as Evangelical Protestants and Catholics are the least likely to discuss birth control with their children (Regnerus 2005).

The distinction between Catholics and Protestants regarding contraceptive style is still significant although the two continue to move closer to one another. Protestants are still more likely to utilize female sterilization than Catholics while Catholics are more likely to use the pill and condoms than Protestants (Goldscheider and Mosher 1991). However, variation in method use exists within groups as well. For instance, Catholics who receive communion once per month or more report higher levels of male sterilization, rhythm or natural family planning methods, and lower levels of pill use relative to Catholics who receive communion less frequently (Goldscheider and Mosher 1991). Religious service attendance seems to work in a similar fashion among Protestant groups but the effect size differs in magnitude by race and ethnicity

(Goldscheider and Mosher 1991). These differences in religious affiliation become important when you consider that in some studies 74% of respondents identified some religious affiliation (Gold, Sheftel, Chiappetta, Young, Zuckoff, DiClemente, and Primack 2010).

Of the limited existing research on religious affiliation and contraceptive use most predict that individuals from religious groups that condemn contraceptive practices are more likely to utilize methods that minimize or require no contact at all with health professionals, such as condom use (Goldscheider and Mosher 1991). However, Catholic rates of pill use and sterilization are on the rise, which refute the perspective described by the existing literature.

HYPOTHESES

In terms of religion and contraceptive behavior there are really two issues, religiosity and religious affiliation. Based on the literature cited above there are three potential relationships between religiosity and contraception: positive relationship, negative relationship, or no relationship. Unfortunately, the existing literature on the subject can only be considered as mediocre at best. Statistically speaking, many of the current studies utilize poor measures of religiosity and incorporate very limited samples. Some of the variables in a few studies are non-normally distributed leading to questionable statistical inferences. Thus, this author agrees with prior researchers in asserting that "much of what we have described about the impact of religion and religiosity on contraceptive usage…is inferential and speculative" (Goldscheider and Mosher 1991:113). Nevertheless, there are lessons to be learned from each of the three proposed relationships between religiosity and contraceptive behavior.

The hypothesis of no relationship ultimately must be rejected. Firstly, there is enough evidence suggesting either a positive or negative relationship that no relationship seems highly unlikely. Secondly, religiosity has been consistently linked to numerous sex oriented behaviors

as demonstrated by the beginning of this literature review. Religiosity is associated with age at first sex, frequency of sexual activity, number of life time partners, and likelihood of retaining virginity, all of which are in some manner related to contraceptive use as well. Furthermore, religiosity is also linked to the timing, spacing and desired number of children (Goldscheider and Mosher 1991). Therefore, if religiosity is part of all of these mechanisms then it is also very likely that religiosity will play a role in contraceptive use, even if only at the outset. Finally, the studies that failed to find any significant relationship were often the most problematic statistically speaking. It is possible with better data and more refined models the studies may have found a significant relationship.

The more pressing question is which direction does the relationship between religiosity and contraceptive use represent, positive or negative. Unfortunately, to date no study has adequately settled the dispute. But we can still learn from the various proposed theoretical explanations of religiosity and contraceptive behavior. The few that have come up thus far are: religion as gatekeeper, religious adaptation, bi-directionality, and social control.

Religion as a gatekeeper refers to the protective nature of religion as described earlier. Essentially, this theory holds that religion acts primarily as an agent of socialization (Wallace and Forman 1998). In this context religion shapes attitudes, beliefs, and behaviors of the individual as well as the family. Since religion has been known to influence parenting styles the influence of religion as a gatekeeper may begin at birth for adolescents (Regnerus 2003). Therefore, religion in and through the family may shape life experiences from a very early age and shield individuals from undesirable influences. If very religious parents were to place their children in a religious school, surrounded by like minded children, and limit to the extent possible social networks then it is possible that religion, albeit indirectly, plays a major role in

socialization. It is easy to imagine then that the tenets of the religious system are encouraged by several agents. This is one manner in which religiosity could impact contraceptive practices. If the religious system advocates contraception or does not advocate any sexual behavior then we may see fluctuations in use based on levels of religiosity.

Religious adaptation and bi-directionality are very closely related. Religious adaptation holds that as adolescents engage in sexual behavior levels of religiosity will change proportionally to alleviate cognitive dissonance (Meier 2003). We would expect then that religion may be a strong predictor of age at first sex but religion would play little to no role in decisions concerning sexual behavior later on. This leads into the notion of bi-directionality. Bi-directionality simply assumes that religiosity effects behavior but behaviors all effect levels of religiosity (Hardy and Raffaelli 2003). In the case of sex and contraception, the behavior would have a negative effect on religiosity to lessen feelings of guilt. However, the assumptions found in this approach will be heavily mediated by religious tradition. In a belief system that does not oppose contraception this theory may have less explanatory power. Nevertheless, in religious traditions like Catholicism this theory may explain the behavior quite well. Catholics that are aware of the Churches stance on contraception are probably more likely to diminish Church authority regarding issues of sexuality in order to diminish levels of guilt.

On a similar note cognitive dissonance in of itself may contribute to individual behavior. Religious individuals may be more likely to engage in risky sexual behavior or noncontraceptive behavior (Rostosky et al. 2004).Contraceptive use is indicative of at least some level of foresight or planning. Highly religious individuals may not be willing to make such plans due to the cognitive dissonance they are likely to encounter. Therefore, such individuals might be willing to engage in the behavior “spontaneously” in order to lessen feelings of responsibility or guilt since

they just got caught in the moment. However, a few studies looking at religious adaptation, bi-directionality, and cognitive dissonance have found little evidence to support the theories (Hardy and Raffaelli 2003; Meier 2003; Rostosky et al. 2004).

Many theorists stretching back to Durkheim have argued that religion functions as a form of social control (Regnerus 2003; Rohrbaugh and Jessor 1975; Rostosky et al. 2004). Rohrbaugh and Jessor (1975) argue that there are four pathways in which religion functions as an agent of social control. Religion creates organized "sanctioning networks" that then emphasize and support acceptable activities and behaviors and simultaneously reject opposing activities (Rohrbaugh and Jessor 1975:137). Then, religion helps create a sensitivity to ethical and moral issues and provides appropriate normative behaviors. Religion also institutes a deity that has the ability to judge and punish. Finally, religion encourages an "obedience orientation" (Rohrbaugh and Jessor 1975:137). The social control approach explains well why individuals don't engage in risky behavior but fails to fully explain why individuals may engage in positive behaviors such as volunteering (Regnerus 2003). Nevertheless, in terms of contraception, social control would predict a negative relationship between religiosity and contraception bearing in mind once again the variation in religious tradition regarding the acceptability of contraceptive practices.

This handful of theoretical perspectives does not represent all available perspective but simply the perspectives invoked in the current literature on religiosity and contraception. Looking at the theory and existing empirical evidence it is still unclear exactly how religiosity and contraception may be related. Going back to the three potential relationships between religiosity and contraceptive use (no relationship, positive, and negative) no relationship must still be rejected. All the theoretical perspective to date hypothesize some form of influence, direct

or indirect, and most of the empirical evidence also finds some type of relationship. So we are left with the positive or negative relationships.

However, the theory can't predict which direction the relationship will take without first considering the various beliefs coming out of different religious affiliations. In a religious system that favors contraception parents and other role models may be more likely to engage in conversations regarding contraceptive use and safe sex (Regnerus 2005). In those religious systems religiosity will likely have a positive relationship with contraceptive use (Raine et al. 2003). However, in the opposite situation, religious traditions that have established negative norms regarding sexual behavior are going to offer less information about contraceptive use and place greater strain, by means of cognitive dissonance, on the individual that uses contraception. Therefore, in such circumstances we would expect the direction posited by social control theory to stand, namely that individuals with higher levels of religiosity will be less likely to use any form of contraception.

Therefore this project proposes three hypotheses that in keeping with the existing literature those religious groups that condemn contraception will be the less likely to use forms of contraception that require continual aid of health professionals. However, this paper will go one step further and hypothesize that religiosity, in particular, frequency of religious participation, will mediate the relationship between religious affiliation and contraceptive method choice. Formally stated:

> H_1: Respondents belonging to religious groups that formally oppose contraception will be at greater risk of using "other" contraceptive methods rather than long-acting, oral forms of contraception, and condoms than respondents belonging to religious groups that don't formally oppose contraception controlling for all other factors.

H_2: Respondents that attend religious services frequently (2-3 times per month or more) will be at greater risk of using "other" contraceptive methods rather than long-acting, oral forms of contraception, and condoms than respondents that don't attend religious services as frequently holding all else constant.

H_3: Those respondents that claim religion is very important in their daily life will be at greater risk of using "other" contraceptive methods rather than long-acting, oral forms of contraception, and condoms than respondents that claim religion is not important at all holding all else constant.

DATA AND METHODS

This project will employ data from the National Survey of Family Growth (NSFG) collected between 2006 and 2010. The NSFG began data collection in 1973 and completed the first five cycles of collection in 1973, 1976, 1982, 1988, and 1995 with the number of female respondents ranging from 7,000-10,000. The data was collected using in-home interviews of women between the ages of 15 and 44 from a national sample of the non-institutionalized civilian population. The original intent of the survey was to collect reliable data on a number of national rates of family growth including: marriage, divorce, contraceptive practices, infertility. In 2002 the NSFG began collecting data on men and women between the ages of 15 and 44 based on an area probability sample. The final sample included 7,643 females and 4,928 males.

The data for this project come from the 2006-2010 collection phase of the NSFG. This sample includes a total of 22,682 (W=12,279; M=10,403) men and women between the ages of 15 and 44. In-person interviews were conducted from June 2006 to June 2010. Interviews were conducted by trained female interviewers using computer-assisted personal interviews. The interviews with women lasted on average 80 minutes and 60 minutes for men. Respondents were

offered $40 dollars to participate with a response rate of nearly 80%. This analysis will rely on a subsample of the 2006-2010 NSFG data in which only women at risk of pregnancy will be sampled.

MEASURES

The dependent variable in this analysis is contraceptive method at first sex. Some researchers have argued that religious influence is strongest at first sex (Gold et al. 2010). Similarly, prior research assumed that contraceptive method at first sex was more memorable than contraceptive method in the past year (Frost and Darroch 2008). For these two reasons contraceptive method has been operationalized as the method reported at first sex. Method used in the last 12 months was also tested with similar results but only method used at first sex are reported here. The NSFG allows respondents to select from 24 various contraceptive methods. Since many of the methods have so few cases this project will follow precedent in the literature and combine the various methods into four groups (Frost and Darroch 2008). The first group labeled as "long-acting" methods will include devices such as IUD's, implants, injectables, patches, and surgical sterilization. The second group titled "pill" will include the birth control pill. Group three labeled as "condoms" includes only male condoms and the fourth group labeled "other" includes withdrawal, periodic abstinence, rhythm or natural family planning methods, spermicides, foams or jellies, and other barrier methods. The dependent variable will be coded from 1 to 4 with 1=other, 2=condoms, 3=pill, 4=long=acting.

The key independent variables are religious affiliation and religiosity. Religious affiliation can be difficult to code. Surveys in the past have included up to 50 various religious groups to choose from. It would be difficult if not impossible to retain all the groups and achieve statistically significant results for more than a handful of the groups do to incredibly small

sample sizes for most affiliations. Fortunately, there have been a number of classification schemes to organize all of the religious affiliation into meaningful, manageable, and testable categories. One of the more widely accepted schemes is referred to as the RELTRAD method (Steensland, Park, Regnerus, Robinson, Wilcox, and Woodberry 2000). RELTRAD builds on prior schemes but improves the classification by evaluating groups based on history, religious beliefs and doctrine, as well as religious rituals and services. The NSFG already codes religious affiliation by the RELTRAD system resulting in six distinct groups; Mainline Protestants, Evangelical Protestants, Black Protestants, Catholics, other religions, and no religious affiliation. However, including so many variables in a multinomial logistic model only further complicates the interpretation. Therefore, in order to simplify the model I have combined religious affiliation into a single dummy variable in which those religious groups that formally oppose various contraceptive practices (Evangelical Protestants and Catholics) are coded as 1 and all others are coded as 0.

Measures of religiosity have a long standing history but recently have been the focus of much criticism. As briefly described above, most surveys only incorporate single item measures of religiosity. Unfortunately, the NSFG only asks respondents two questions regarding religiosity. One question addresses the frequency of religious service attendance and the second question asks how important religion is in the respondent's daily life. These two questions are typically the key measures of religiosity. However, researchers have questioned the adequacy of measuring such a complex phenomenon with only two questions (Glock and Stark 1965; Gorsuch 1984; Hill, Pargament, Hood, McCullough, Swyers, Larson, and Zinnbauer 2000; Hill and Pargament 2003; Rew and Wong 2006; Zinnbauer, Pargament, and Scott 1999). Nevertheless, in this case there are only two questions available. Frequency of religious

attendance will be separated into a single dichotomous variable where 1 represents respondents that attend services 2-3 times per month or more and 0 represents respondents that attend service less than once per month or don't attend at all. Importance of religious beliefs will be broken into three categories of not important, somewhat important, and very important with not important serving as the reference category.

Other known predictors of preferred contraceptive method include race, education, income, relationship status and age. Race will be coded as four dichotomous variables of Hispanic, non-Hispanic White, non-Hispanic Black, and non-Hispanic Other with non-Hispanic White serving as the reference group. Education will be left as an interval level variable measuring years of education at time of interview. Income is the total household income for the calendar year in dollars. Relationship status has been coded into five dichotomous variables of marriage, cohabiting, divorced, separated, or no relationship with marriage as the reference group. Age represents the respondents age at the time of the interview in years ranging from 15 to 44 years.

ANALYSIS

I will use multinomial logistic regression to test the hypothesis that religious groups that oppose birth control will be less likely to select methods that require contact with health care professionals. Since the dependent variable could be organized according to the effectiveness of each contraceptive method it is possible to calculate an ordered logistic regression. However, prior researchers have employed either simple logistic or multinomial logistic models (Frost and Darroch 2008; Shih et al. 2011). Furthermore, the multinomial logistic model was the best means of testing my specific hypothesis. Multinomial logistic regression is essentially an extension of basic logistic regression which allows for a categorical dependent variable. A categorical

dependent variable would violate several assumptions associated with ordinary least squares regression such as normally distributed, continuous, with a known distance between categories. Therefore a multinomial logistic regression is appropriate. Similarly, if the dependent variable only contained two possible categories then a simple logistic model would suffice. However, this dependent variable contains four categories so once again multinomial regression is appropriate. Finally, after the multinomial logistic regression I will also calculate the percent change in the relative risk ratios.

RESULTS

Descriptive statistics are displayed below in Table 1. Method used at first sex is heavily concentrated on condom and pill use. These percentages will likely change as women age. Almost half (42%) of respondents belong to a religious group that formally opposes contraception and nearly half (43%) of all respondents attend religious services 2-3 times per month or more. Just over half (54%) of respondents stated that religion was very important to their daily life. Finally, the average age in this sample is approaching 28 with an average education of 13 years and an average income of $39,900.

Table 1. Descriptive Statistics (N=3,671)

	Mean	Std Dev	Range
Contraceptive Method			
Long-acting	.19		0-1
Pill	.33		0-1
Condom	.35		0-1
Other	.14		0-1
Oppose Contraception	.42		0-1
Religious Attendance	.43		0-1
Religious Importance			
Very Important	.54		0-1
Somewhat Important	.39		0-1

Not important (ref)	.07		0-1
Relationship			
Marriage (ref)	.35		0-1
Divorce	.08		0-1
Separated	.03		0-1
Cohabiting	.12		0-1
Never Married	.42		0-1
Age (years)	27.90	7.50	15-44
Education (years)	13.27	2.66	9-19
Income ($1000's)	39.9	26.30	2.5-82.5+

The results of the multinomial logistic regression model are found in Table 2. Holding all other variables constant, the risk of using long-acting contraceptives as opposed to other contraceptives for respondents that belong to a religious group that opposes contraception are multiplied by .77 compared to respondents that don't belong to a religious group that opposes contraception. Similarly, the risk of using other contraceptives as opposed to condoms for respondents that belong to a religious group that opposes contraception is multiplied by .78 compared to respondents that don't belong to a religious group that opposes contraception controlling for all other variables. The comparison of service attendance returned no significant results when other contraceptives were the contrast. However, compared to respondents that stated religion was not important at all, respondents that see religion as very important were at risk of using oral contraceptives as opposed to other contraceptives by a factor of .52.

In terms of relationships holding all else equal, separated women and women that have never been married in the sample were at a higher risk of using oral contraceptive methods (3.70, 1.42) and male condoms (3.71, 2.14) as opposed to other contraceptives and when compared to married women. However, women that were currently separated or had never been married were

at less risk (38% and 58% respectively) of using long-acting methods as opposed to condoms when compared to married women. The remaining control variables of age, education, and income were mainly only significant in the comparison between oral contraceptives and the other category. Age, however, was also a significant predictor of long-acting method use versus other methods. For example, for every one year increase in age the risk of using long-acting methods as opposed to other contraceptive methods multiplies by .97.

Table 2. Relative risk ratio from multinomial regression examining relationship between characteristics and contraceptive method.

	Relative Risk Ratios			
	Long-acting	Pill	Condom	Other (Contrast)
Oppose Contraception	0.77*	1.01	0.78*	1.00
Service Attendance	1.11	1.02	1.10	1.00
Religious Importance				1.00
Very Important	0.56	0.52*	0.67	1.00
Somewhat Important	0.66	0.68	0.81	1.00
Not Important (ref)	1.00	1.00	1.00	1.00
Relationship Status				1.00
Married (ref)	1.00	1.00	1.00	1.00
Divorced	1.62	1.45	1.16	1.00
Separated	2.64	3.70*	3.71*	1.00
Cohabiting	1.37	1.37	1.14	1.00
Never Married	0.73*	1.42*	2.14*	1.00
Age	0.97*	0.95*	0.97	1.00
Education	0.97	1.13*	1.01	1.00
Income	0.99	1.01*	0.01	1.00

LR X^2 =356.88*

Pseudo R^2 = .037
Log Likelihood = -4669.27

*p<.05

Interpreting the results of multinomial logit model can be difficult. The interpretation is often aided by evaluating the percent change in the relative risk associated with the various categories of the dependent variable. In Table 3 Below the percent change comparisons are displayed for a selection of the independent variables. According to Table 3, women belonging to a religious group that formally opposes contraception have a 29.5% increased risk of using other methods rather than long-acting methods and a 27.6% increased risk of using other methods rather than condoms when compared to respondents that don't belong to a religious group that formally opposes contraception holding all else constant. Similarly, all respondents that stated religion is very important in their daily life were at an increased risk of using other methods than any other method in the analysis compared to respondents that claimed religion was not important at all holding all else constant. Age also was a factor. Controlling for all other variables, for every once year increase in age women had approximately a 3-4% increased risk of using other methods than any other method. Education worked in a similar fashion but for oral contraceptives. Holding all else constant, for every one year increase in education women have roughly a 10% decrease in the risk of using other posited methods compared to oral contraceptives.

Table 3. Percent Change in Relative Risk Ratio by various independent variables.

	% Change
Oppose Contraception	
Other vs. Long-acting	29.5*
Other vs. Pill	-0.9

Other vs. Condom	27.6*
Religious Importance	
Very Important	
Other vs. Long-acting	88.8*
Other vs. Pill	83.7*
Other vs. Condom	46.3*
Age	
Other vs. Long-acting	4.5*
Other vs. Pill	4.6*
Other vs. Condom	2.4*
Education	
Other vs. Pill	-11.3*

DISCUSSION

HYPOTHESIS 1

Based on the results displayed in Table 3 there is moderate evidence that supports my initial hypothesis. I hypothesized that women belonging to groups that formally opposed contraceptive use were more likely to use contraceptive methods categorized as other compared to any other methods that would require more contact with health professionals. It is important to note that of the possible methods included in the "other" category (withdrawal, periodic abstinence, rhythm or natural family planning methods, spermicides, foams or jellies, and other barrier methods) nearly 90% of women are using withdrawal. Withdrawal arguably requires the least amount of contact with any health professional whatsoever. Therefore, women in religious groups that oppose contraception are using withdrawal as opposed to condoms and long-methods supports my hypothesis. Even condoms have to be purchased over the counter thus exposing the purchaser to potential ridicule and discomfort. However, the hypothesis is not fully supported.

The relationship between oral contraceptives and the "other" category was not significant but it was in the wrong direction. This last relationship is unclear and deserves further scrutiny.

I believe that it is possible that women belonging to religious groups that disapprove of contraceptive use will experience higher levels of cognitive dissonance and feelings of guilt or shame. Therefore, these women are more likely to engage in contraceptive behaviors that allow for complete secrecy. Particularly in small communities where individuals are well connected the potential shame corresponding with the purchase of something as simple as condoms may dissuade women from using that form of contraceptive. The fact that women in these religious groups are at greater risk of using withdrawal coincides with previous literature identifying similar religious groups as at high risk for unplanned pregnancies (Gold et al. 2010).

HYPOTHESIS 2

I found no support in my model for this particular hypothesis. None of the results related to frequency of attendance achieved statistical significance. I did code this variable in a number of ways with still no significant results but perhaps there is still a better way to categorize frequency of religious attendance.

HYPOTHESIS 3

The data did support the third hypothesis. Respondents that said religion was very important to them were more likely to use "other" methods when compared to long-acting, oral, and condoms. This further supports prior literature that found a negative relationship between religiosity and overall contraceptive use as well as less effective means of contraception (Studer and Arland 1987). Once again, these women that emphasize religious beliefs daily are likely to experience more feelings of guilt and cognitive dissonance and therefore are at greater risk of using a contraceptive method that can be kept behind closed doors.

CONCLUSION

I began this project with the assumption that population growth/decline, contraceptive use and method choice, and religion were all closely interrelated. Given the growing number of declining populations and the problem of aging populations, many countries are currently facing or will be shortly facing a whole host of social, economic, and political problems. However, to date pronatalist policies have failed to make much of an impact as evidenced by Australia's baby bonus program. Therefore, at some point in the near future demographers and politicians alike will be in search of better means of increasing the total fertility rate. Since shifting religious beliefs and the decline of religious authority contributed to the current situation it is possible that religion may in the future provide a solution.

As argued above the shift in doctrinal stance on the part of a large number of religions helped enable widespread contraception use. But this paper demonstrates that belonging to a religious group that formally opposes contraceptive use does impact which method an individual selects. This provides some evidence that religion still influences decisions regarding contraception. Clearly, more research is needed before any firm conclusions can be reached. However, these results show that religion still has some potential.

Future research ought to pay close attention to the strength of religious influence particularly as it concerns contraceptive use. It would be particularly helpful and interesting to narrow the focus to a single religious group such as Catholics that formally opposes contraceptive use and identify characteristics of users versus non-users as well as repeat the above investigation of method choice. Limiting the sample to a single religious group may provide a more detailed understanding of exactly how religion and contraception interact. Furthermore, Catholicism is unique in that it has an established history opposing contraception

but a large majority of members currently use some form of contraception. However, following the papacy of John Paul II, and now with the current pope Benedict XVI, the fidelity to magisterial teachings amongst clergy and laity have been steadily changing with the younger generations distinctly more in favor of Church teachings on sexual morality and contraceptive use (D'Antonio 2007). If we can identify the mechanisms at work in such a change we may be able to apply what we learn to other religious groups.

Ultimately, religion has historically been a powerful motivator and regulator of social action. Rarely if ever has public policy or codified law had the potential of fervent religious belief. Therefore, in the face of population decline and with the failure of virtually all pronatalist policies, religion may indeed offer the best solution to declining fertility.

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