Religion and Sexual Initiation in Brazil

Abstract

Increasing adolescent fertility and declining age at first sexual intercourse have been accompanied by a transformation in Brazil's religious landscape, signaled by the significant growth of Protestantism, and Pentecostalism in particular. Using data from the 2006 Brazil Demographic Health Survey (PNDS-DHS), we examine the associations between religion, as measured by religious affiliation and religious attendance, and unmarried adolescent sexual initiation in Brazil. Findings reveal that even after controlling for demographic, socioeconomic, and community variables, unmarried adolescent women's sexual initiation differs across religious affiliation and attendance patterns in Brazil: those who belong to traditional Protestant or Pentecostal churches, as well as those that attend church frequently, are at lower risk of engaging in sexual activity. Together with available ethnographic evidence, the results suggest that Pentecostalism and church attendance may both directly and indirectly shape unmarried adolescent women's sexual decision-making in Brazil.

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Introduction

Although current levels of adolescent childbearing are elevated in most areas of the developing world, the age-specific fertility rate among girls aged 15-19 decreased in the majority of developing countries between the 1970s and the 1990s. Significant declines, for instance, took place in Asian, sub-Saharan, and North African countries (Westoff, 2003; Singh, 1998; Bongaarts and Cohen, 1998). In Latin American and Caribbean countries like Dominican Republic, Ecuador, Mexico, and Peru, however, adolescent fertility has fallen much more slowly (Singh, 1998). In others, such as Brazil, the adolescent fertility rate has even risen during the last two decades (Berquó and Cavenaghi, 2005a; Gupta and Leite, 2001).

The reasons why teenage fertility has increased in Brazil remain largely speculative, given that education levels and the availability of contraception have also been growing there (Rios-Neto, 2005; Riani, 2005; Caetano, 2004). One of the most proximate determinants of fertility—age at first sex—probably plays an important role in this phenomenon, since the percentage of Brazilian teenagers who report never having had sex decreased dramatically in 20 years: from 80 percent to 45 percent (between 1986 and 2006). Such a decline may be indicating changes in attitudes about sex, marriage, and childbearing in Brazil, which are traditionally "taught" through religious norms and values (Pierucci, 1978).

Increasing adolescent fertility and declining age at first sexual intercourse have been accompanied by a transformation in Brazil's religious landscape, which has been

marked by three associated phenomena: the end of Catholic dominance in the religious market, the significant growth of evangelical Protestantism, led by Pentecostalism, and the growth of those who identify themselves as having no religion.

Among the existing social, economic, and demographic factors that may affect adolescent sexual and reproductive behavior in Brazil, religion deserves further consideration, not simply because this country has experienced tremendous change in its religious landscape during the last decades, but also because religion is both a primary socialization agent of adolescents and sex is a sphere of human behavior considered high in religious applicability (Regnerus, 2007). Even so, the association between religion and adolescent sexual and reproductive behavior in Brazil has not received extended attention. Toward that end, this article evaluates associations between religion and adolescent sexual initiation in Brazil.

We use data from the 2006 PNDS (*Pesquisa Nacional de Demografia e Saúde*), which is part of the MEASURE DHS (Demographic and Health Survey), a nationally representative survey of women aged 15-49 years. Three particular questions guide our research: (1) Are religious denomination and religiosity (measured as religious service attendance) associated with age at first sexual intercourse in Brazil? (2) If so, how does each dimension of religion differ in this association? (3) Do these associations vary across socioeconomic, demographic, and community characteristics?

Sexual initiation and adolescent fertility in Brazil

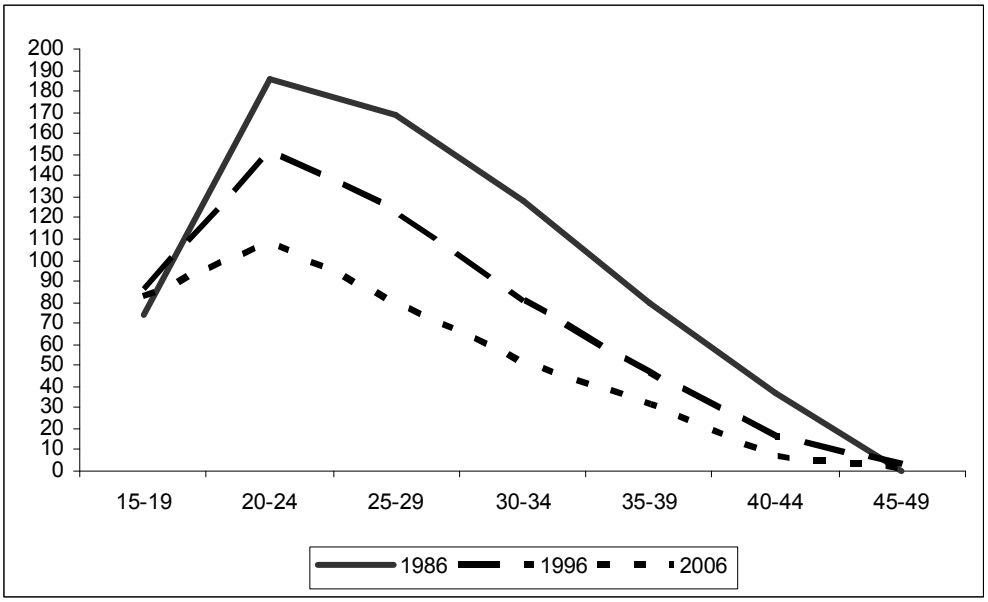
Brazil experienced a dramatic and rapid fertility decline between 1960 and 2006, when the Total Fertility Rate (TFR) dropped from 6.3 to 1.8 children. During this process, age-

specific fertility rates (ASFR) diminished substantially for all age groups in the reproductive span. However, older age groups presented steeper declines, forming a concentration of fertility at younger ages (Berquó and Cavenaghi 2006; Berquó and Cavenaghi, 2005a; Berquó and Cavenaghi 2005b; Gupta and Leite, 2001; Gupta, 2000).

Besides the unequal fertility decline across the reproductive age groups, the 1990s witnessed a new factor that contributed to the concentration of fertility at younger ages: the rise of fertility rates among adolescent women, defined as the population aged 15-19. Estimates from the Brazil Demographic and Health Survey (DHS) reveal that the ASFR for adolescents increased from 74 births per 1,000 women in 1986 to 86 in 1996. It is worth noting that this age group was the *only one* that witnessed an increase in the percentage of fertility during this ten-year period.

The 2006 DHS reveals a slight decrease (to 83 births per 1,000 women) of adolescent fertility in Brazil since 1996. Nevertheless, the period between 1996 and 2006 also witnessed a greater fertility decline among the other age groups (from 20-24 to 45-49 years of age) when compared to that presented by adolescent mothers. Graph 1 displays the ASFR per 1,000 women in Brazil in 1986, 1996, and 2006, revealing how fertility rates for all age groups--except for the adolescents--declined sharply during the last two decades. Consequently, the proportional contribution of births among adolescents increased from 11% to 17% between 1986 and 1996, and then to 23% in 2006. Thus, almost one out of every four births in 2006 was to a teenage mother. During the same period, the average age at first sexual intercourse has declined in Brazil. This is likely associated with changes in adolescent fertility in Brazil.

Graph 1
ASFR per 1,000 women in Brazil: 1986, 1996, and 2006



Source: DHS 1986, 1996, and 2006

Previous studies have suggested other determinants associated with adolescent sexual and reproductive behavior in Brazil. Among the many social, economic, and demographic factors that potentially explain variations in reproductive behavior, education is considered one of the most important. In general, lower education is associated with lower age at first intercourse, lower age at first birth, and higher adolescent fertility in Brazil (Leite, Rodrigues and Fonseca, 2004; Gupta, 2000).

The association between education and youth fertility in Brazil has been evaluated by many researchers. Gupta and Leite (2001), for instance, studied adolescents in Northeastern Brazil and found that education displayed the strongest and most consistent association with delayed childbearing between 1986 and 1996. The work of Leite, Rodrigues, and Fonseca (2004), using data from young women between 15 and 24 years of age from the Southeast and Northeast regions of Brazil, focused on three dimensions of reproductive behavior: sexual initiation, use of contraceptives in the first sexual

relationship, and fertility. These authors found that level of education was the most important risk factor in the three dimensions analyzed, even after controlling for other key covariates.

Besides educational attainment, age, race, participation in the labor force, childhood residence, degree of urbanization (or current place of residence), and geographic regions each tend to shape adolescent sexual decision-making. Much less is known about the implications of religious involvement for adolescent sexual and reproductive behavior in Brazil.

Religion in Brazil

The last decades have witnessed a rapid and widespread pluralization of Brazil's religious landscape, which has been characterized by a tremendous variety of religious beliefs and practices, as well as uptake of new religious patterns (Pierucci and Prandi, 2000; Perez, 2000; Decol, 1999; Chesnut, 1997; Burdick, 1996; Bruneau, 1982). Three substantial developments in particular have attracted attention in this process of religious transformation.

The first is the end of Catholic domination of Brazilian market share in religion. According to data from the Brazilian censuses, the percentage of Catholics in Brazil dropped from 95 percent in 1940 to 74 percent in 2000 (IBGE, 2007). The second development is the concomitant growth of Protestantism (led by Pentecostalism): its affiliation rate grew from three percent in 1940 to 15 percent in 2000 (Mariano, 2004). The third shift in Brazil's landscape is the considerable growth among those who identified themselves as having no religion. They represented less than one percent of the

whole population in Brazil in 1940, but by 2000 have increased to seven percent (IBGE, 2007), indicating increasing (though still modest) secularization.

Two other religious affiliations—Spiritism[1] and Afro-Brazilian[2] religions—represent 2.5% of the Brazilian population in 2000. Additionally, there remain a wide variety of religions that comprise less than one percent of the population, such as Judaism, Buddhism, Jehovah's Witnesses, and Mormons (Pierucci and Prandi, 2000). As suggested above, even though Brazil's religious landscape is witnessing growing pluralization, it remains largely represented by two major faiths: Catholicism and Protestantism. Brief comments on their cultural presence in Brazil are in order.

Catholicism

Catholicism was introduced in Brazil by the Portuguese crown in the very beginning of its arrival in this country in 1500, and enjoyed official religious hegemony until the early nineteenth century, when religious pluralization started to emerge. Although the percentage of Catholics has declined substantially in the last several decades, results from the 2000 Brazilian Census reveal that it remains high. This figure, however, may overestimate or hide the real strength of Catholicism in Brazil, which has long been perceived as allowing cultural flexibility and variety in its religious practices.

Catholicism in Brazil, for instance, has been malleable enough to tolerate a variety of different religious traditions and practices, exhibiting syncretic traits[3] (Mariz,

[1] Spiritism, or French spiritualism, is based on books written by French educator Allan Kardec, in which he reported attempts to communicate with spirits.
[2] In Brazil, Umbanda and Candomblé, are the two principal afro-Brazilian religions. Their main elements are: spirit possession, animal sacrifice, and syncretism with Catholicism.
[3] This phenomenon represents a mixture of Catholicism, Afro-Brazilian-Indigenous religions, and Spiritism elements, resulting in a fusion of various practices, rituals, and beliefs from each of these traditions.

1994; Bruneau, 1982). As a result, some suggest that while Catholicism continues to be transmitted from one generation to the next in Brazil, it does not really inhabit the conscience of the people (Azevedo, 2002). The majority of Catholics in Brazil today consider themselves traditional: they attend church sporadically, are not involved in renewal movements, and generally "maintain religion as a social identity, going to church only for rites of passage" (Pierucci and Prandi; 2000:630). Consequently, such nominal Catholics may declare themselves as Catholics, but they may not exhibit close ties to their religious affiliation and doctrine. Chesnut (2003) reinforces this idea, pointing out that not more than 10 percent of Brazilian Catholics have been active practitioners of the faith, attending mass and other ecclesial actives on a regular basis.

However, two important Catholic renewal movements took place in Brazil in recent decades: the Christian Base Communities (CEBs)[4] and the Movement of Catholic Charismatic Renewal (CCR). CEBs are Catholic congregations engaged, through meditation and prayer, in efforts to raise political and social awareness and promote the struggle for social justice (Burdick, 1996; Mariz, 1994). They emerged in Latin America in the 1960s, and became widely recognized by the 1970s. Unlike the CEBs, the CCR is uninterested in issues of collective nature; rather than, it places special emphasis on the sphere of intimacy, specially regard to the family, habits, and sexuality (Pierucci and Prandi, 2000). In addition, Charismatic Catholics, like Protestant Pentecostals, highlight the transformative power of the Holy Spirit. The CCR was introduced in Brazil in the early 1970s, and different from the CEBs, its popularity has sharply increased, making it the largest and most active Catholic lay movement in Brazil (and in most Latin American countries too) (Chesnut, 2003).

[4] The acronym for *Comunidade Eclesial de Base*.

Protestantism

The nineteenth century was marked by the settlement and growth of Protestantism in Brazil. The first Protestant church was organized in Brazil in 1837 by German Lutherans, who had settled first in São Paulo, Rio de Janeiro, and Rio Grande do Sul in 1823. They were followed by missionaries of the Presbyterian Church from Scotland and the U.S. Methodists, Baptists, Episcopalians, and Seventh-day Adventists arrived in 1867, 1881, 1889, and 1900, respectively (Read and Ineson, 1973). We refer to these denominations as traditional or "mainline" Protestants (the latter of which is a term that resonates better in the U.S. than abroad). Although they were small minorities, they acted as protagonists in helping remake Brazil and Latin America's religious landscape (Chesnut, 2003).

Pentecostalism is a twentieth century phenomenon that spurred the growth of Protestantism in Brazil during the past several decades. It arrived in three different waves (Alves and Novellino, 2006; Mariano, 2004; Decol, 1999). The first wave, dubbed classic Pentecostalism, introduced churches as Assemblies of God, the Brazil's largest Pentecostal Protestant denomination. The second wave, in the 1950s and 1960s, brought the Foursquare Gospel Church, Brazil for Christ, and God is love. More recently, the third wave, called neo-Pentecostalism, emerged in Brazil, and was led by the Universal Church of the Kingdom of God (Mariano, 2004).

In his book about the Pentecostal boom in Brazil, Andrew Chesnut (1997) explained how Pentecostalism enjoyed overwhelming success in appealing to the poor (or the poorest of the poor) based on the motivation of positive transformation for this group. He observed that the majority of his study's informants in Belém (state of Pará) had adhered to the faith in an attempt to cure an illness. The 1996 ISER (Institute of Religious

Studies – Rio de Janeiro, Brazil) study, the largest survey conducted among Protestants in Latin America, revealed similar results: 55 percent of Protestants reported converting to the faith at the time of a "serious problem" (Fernandes et al, 1998). Sickness, together with alcohol abuse and family conflict, accounted for more than a half of these problems. Assuring to solve them, Pentecostalism offers the power remedy of faith healing, which is considered a gift of the Holy Spirit.

Believers cannot claim to be fully converted to Pentecostalism until they have completely abandoned certain practices. Pentecostal doctrine, for instance, strongly prohibits alcohol consumption, drug use, smoking, premarital and nonmarital sex as well as modern coiffures or dressing, use of cosmetics, and other different types of mundane pleasures (Mariano, 2004; Burdick, 1996). In an excellent ethnographic study conducted in Brazil, John Burdick talked about those prohibitions and how they may influence the lives and behaviors of Brazilian youth. He argued that courting is closely regulated in Pentecostal churches, such as the Assemblies of God, where premarital sex is considered a very serious sin. According to the author, "those who surrender to temptation [premarital sex] may be severely disciplined, even excluded from communion for a time, and may suffer the withdrawal of the Holy Spirit" (Burdick, 1996: 131). Because Pentecostal doctrine discourages those behaviors, adolescent women who engage in premarital sexual relationships may face evident sanctions at their church, especially if they get pregnant. Therefore, Pentecostal girls may consider their religious faith and/or the sanctions imposed by their church when making choices about sex and reproduction.

Sexual and reproductive behavior and religion in Brazil

When religion is considered in studies of adolescent sexual behavior or fertility, it is typically used as simply a control variable (e.g., Catholics versus non-Catholics), or measured so broadly that the significance of the results is quite limited (McKinnon, Potter, and Garrard-Burnett, 2008). Moreover, the majority of these studies take into account just one dimension of religious involvement in their analyses – religious affiliation.

The work of Gupta and Leite (2001) and Gupta (2000), for instance, included two religious categories in their analyses: Catholics and non-Catholics/people with no religion (i.e., everyone else). Gupta and Leite (2001) compared three DHS conducted in Northeastern Brazil in 1986, 1991, and 1996 and found that the difference in the risk of having the first child at ages 15-19 among Catholics and everyone else was significant in 1986, but not in 1991 and 1996. In 1986, adolescent Catholics were less likely to have given a birth than were everyone else. Moreover, Gupta (2000), using the same data and dichotomous variable, found that religious affiliation has no association with adolescents' first sexual intercourse in Northeastern Brazil. However, Gupta (2000) included a religious-attendance variable and concluded that those adolescents who attended religious services at least monthly presented lower odds ratios of having premarital intercourse before age 20. Religiosity was also significantly related to increased likelihood of contraceptive use at sexual initiation.

Based on retrospective data collected from women aged 18 to 24 living in the metropolitan areas of Porto Alegre, Rio de Janeiro, and Salvador, Aquino et al (2003) noted that Catholic women had a lower percentage of pregnancy before age 20 than their

counterparts who belonged to Pentecostal churches, or to other churches, or that identified themselves as having no religion. Another example is the study of Martins et al. (2006), which used information on 1,594 adolescents from 13 public and five private schools in the city of São Paulo. They found that those who belonged to Protestant churches were less knowledgeable than Catholics about contraceptive methods.

Unlike the studies mentioned above, the work of McKinnon, Potter and Garrard-Burnett (2008) employed finer religious categories and more sophisticated statistical models. Using data from the 2000 Brazilian census, the authors explore the relationships between Protestantism and fertility and family formation among adolescents aged from 15 to 17 living in the metropolitan region of Rio de Janeiro. They note that the odds of ever having had a live birth for adolescent women belonging to Baptist, other Mainline Protestant, Assembly of God, and other Pentecostal churches is reduced by about one third when compared with Catholics, adjusted by individual- and community-level controls. They also note that adolescents who belong to the Assembly of God, other Pentecostal Protestant, or other mainline Protestant churches are much more likely to be married than Catholics.

Explanations for the influence of religion: direct and indirect effects

Research on religious influence usually notes two types of effects: direct and indirect ones. Direct effects studies of religious influence concern the idea that sacred teachings, beliefs and values offered by religious groups may directly affect peoples' behavior. This straightforward influence is found most often when some aspect(s) of religion have an independent effect on the outcome of interest net of other important independent

influences (Regnerus, 2003). Not surprisingly, individuals with greater religious commitment are expected to be more apt to reproduce in their actions the implications of those sacred teachings (Regnerus and Smith, 2005).

According to social control and social learning theories of adolescent behavior, religious functions are seen as a source of social and individual control that encourage adolescents to avoid actions that they might otherwise feel like doing (Regnerus, 2007 and 2003). That is, religion is often seen as a directly inhibiting force, which may postpone, reduce, or even prevent certain behaviors like premarital sexual activity.

Nevertheless, the absence of direct religious effects does *not* mean that religion is not important (Regnerus, 2003). Indeed, the most common way that religion influences human actions is perhaps through indirect influences. These are "unintentional social byproducts when religious people doing things for religious reasons facilitate other distinctive outcomes" (Regnerus and Smith, 2005: 24). Research on indirect religious influences always calls attention to mechanisms or pathways by which religion may assist in bringing about a desired outcome. Christian Smith (2003) formulates an integrated account of religion's influence in the lives of American adolescents, suggesting key factors or pathways through which religion may act. These are aggregated around three main dimensions: moral order, learned competences, and social and organizational ties.

The dimension of moral order includes such specific religious pathways: (1) moral directives; (2) spiritual experiences; and (3) religious role models. According to Smith, these factors promote particular normative ideas of what is good and bad, right and wrong, worthy and unworthy, guiding human consciousness, choice, and action toward particular ends. The second dimension of religion influence, learned competences,

comprises these three factors: (4) community and leadership skills; (5) coping skills; and (6) cultural capital. In order to explain such factors, Smith (2003: 20) argues that religion can strongly influence the lives of youth "by increasing their competence in skills and knowledge that contribute to enhancing their well-being and improving their life chances". The last source of religious influence consists in social and organizational ties that affect the opportunities and constraints that young people face. In this hypothesized dimension of religious influences, Smith includes (7) social capital, (8) network closure and (9) extra community links that religious involvement often affords young people. These nine mechanisms (or means) of religious influence on adolescents' lives do not typically operate independently and some of them suggest that religion is primarily indirect in its influence.

The comprehension of the pathways that religion works through is essential for a better understanding of how it may shape individuals' behavior. Nevertheless, the influence of religion on human sexual behavior is often suspect. As pointed out by Regnerus (2007), this skeptical view suggests that the apparent religious influence would be actually caused by three different factors: (1) selection effects, or (2) reverse causation, (3) social desirability bias. The first of these, the selection effects, assumes that both the predictor (e.g., religion) and the outcome (e.g., adolescent sexual behavior) are, in fact, a consequence of some other unobservable or unknown factor(s) that causes both independently (Regnerus and Smith, 2005). The second explanation, the reverse causation (or religious exit), highlights that causal direction may be inverse, that is, decisions about religion are a product of the outcome under consideration (e.g., sexual behavior) and not the other way around. Finally, the third alternative explanation is social

desirability bias, which is the inclination to present oneself in a manner that will be viewed favorably by others. Such inclination to lie can effect the way how respondents answer research questions, therefore, confounding the results.

Data and Methodology

This article uses data from the 2006 PNDS (*Pesquisa Nacional de Demografia e Saúde*) that is part of the MEASURE DHS (Demographic and Health Survey), a nationally representative survey of women aged 15-49 years, which contains detailed information on socio-demographic variables and reproductive and child health. Because the 2006 DHS is based on a stratified two-stage cluster design, it is necessary to specify the sampling weights and primary sampling units (used in clustering). In *Stata*, we use the "*svyset*" command, and then produce estimates that are corrected for the complex design of the survey. All descriptive analyses shown here are corrected by this command. The total sample is comprised of 15,575 women, but since this study concerns never-married adolescent women, defined as the population aged 15-19, the sample was reduced to 1,876 women.

For those women who already reported having had sexual intercourse, the 2006 Brazil DHS asks the age at first sex. This information is essential, or at least very helpful, to better understand the association between sexual debut (and the risk of adolescent childbearing) and religious affiliation and religious attendance.

The 2006 Brazil DHS classifies religious affiliation into six groups: (1) Roman Catholicism, (2) Traditional Protestantism, (3) Pentecostalism, (4) Spiritism, (5) Afro-Brazilian religions, and (6) others. It also contains a no-religion category. Less than five

percent of the adolescents reported belonging to the last three religious affiliation groups in 2006. Therefore, they were aggregated into one group called "others". Unlike the Brazilian Censuses, the Brazil DHS collects information on attendance at religious services, which allows using a measure of religiosity as well. The 2006 Brazil DHS classifies religious service attendance into five groups: (1) More than weekly; (2) Weekly; (3) Once to three times a month; (4) Less than monthly; (5) Don't attend.

We use an event history model to estimate the association between religious affiliation and religious attendance and the timing of first sexual intercourse, when controlling for key covariates. It is important to note that a substantial number of adolescents had not experienced the event of interest (sexual initiation) at the time the survey was conducted. Therefore, this sample is right censored.

In order to account for right censoring in the estimation of exposure time, we use the Cox proportional hazards model (Allison, 1984). As discussed in Allison (2005) and unlike conventional methods such as logit analysis, the Cox model is able to handle right censored cases. The Cox proportional hazards model is a *semi*parametric method since it does not require that one chooses some particular probability distribution to represent the survival times (Allison, 2005). It may be written as:

$$h_i(t) = h_0(t)\exp(\beta X_i)$$

Where $h_i(t)$ is the transition rate; $h_0(t)$ is the baseline rate, which is the hazard function for an individual with the value zero on all covariates; and β is the vector of parameters for the covariates (X_i) in the model. The following section shows the hazard ratio of having the first sexual intercourse at age t, when controlling for our two main independent variables – religious denomination (Catholic is the reference) and religious

service attendance (attend weekly or more is the reference) – and other selected covariates.

Because adolescent sexual behavior and religious affiliation and religious service attendance differ significantly in a number of socioeconomic, demographic, and community characteristics in Brazil, it is important to adjust our results by these factors as effectively as possible. Other independent variables used in our analysis included the current age (15 is the reference); four categories of race: white (reference), brown, black and others; three groups of years of education: 0-4 years, 5-8 years, and nine years and over (reference); a dichotomous variable based on the information if adolescents work outside home (no is the reference); a dichotomous variable based on the information for currently living in urban areas (rural is the reference) and for childhood residence (lived in a big city/capital when she was 12 is the reference); and five categories for region of residence (Northeast is the reference). We also use a cluster-level aggregate variable for the mean education of the household head for each cluster. Three levels of the household head education were grouped: high, medium, and low (reference).

Finally, it is important to note that the cross-sectional nature of the DHS makes it impossible to document causal effects. It cannot be clear, for instance, whether or not some women may have changed their religious attitudes and behaviors (e.g., going more or less often to church, or converting from one religious affiliation to another) after having intercourse. However, DHS allows observing the potential association between these events, and, at this point, there are no alternative data set for modeling the association between religion and sexual initiation in Brazil.

Results

Table 1 displays the percentage of never-married adolescent women (15-19) by religious affiliation and religious service attendance in Brazil in 2006. While 62 percent of them reported being affiliated with the Catholic Church, almost 14 percent and nine percent identified themselves as traditional Protestants and Pentecostals, respectively. Information on religious attendance reveals a heterogeneous pattern, since 46 percent of never-married adolescents report attending religious services at least weekly, while 36 percent attend less than monthly or never go. Table 1 also notes that never married traditional Protestant and Pentecostal adolescents attend religious services far more frequently than the most: 78 percent of them attend at least weekly, compared with 40 percent of never-married Catholic adolescents. A religiosity divide clearly separates Protestants from other Brazilians.

Table 1- Religious affiliation by religious attendance among never married adolescent women (15-19), Brazil, 2006 (percent)

Religious Affiliation	Religious Attendance					
	> Weekly	Weekly	< Weekly	< Monthly	Never	Total
Roman Catholic	10	30	23	25	12	62
Traditional Protestant	50	28	11	11	0	14
Pentecostal	61	17	10	9	3	9
Other	17	29	23	16	15	5
No religion	1	2	6	22	69	9
Total	20	26	19	21	15	100

Source: The 2006 Brazil Demographic Health Survey (weighted)

Table 2 displays the percentage distribution of never-married adolescent women who reported having had first sexual intercourse in 2006 (38 percent of the total) by selected religious, demographic, and socioeconomic characteristics. Preliminary evidence

points to religious affiliation and religious service attendance as among the variables that account for differentials in adolescent sexual activity. Pentecostals and those who attend religious services at least monthly are less likely to report having had sexual intercourse, compared to those who belong to any other religious affiliations and attend religious service less frequently, respectively.

Table 2 - Percentage of never married adolescent women (15-19) who reported having had first sexual intercourse before age 20, by selected variables, Brazil, 2006 (percent)

Variables	Had intercourse before age 20
Religious Affiliation	
Catholic	39
Traditional Protestant	37
Pentecostal	22
No Religion	44
Others	48
Religious Attendance	
> Weekly	30
Weekly	35
< Weekly	31
< Monthly	45
Never	50
Education	
0-4 years	34
5-8 years	30
9 or more years	43
Work	
Yes	44
No	36
Race/Color	
White	36
Black	25
Brown	41
Other	44
Childhood residence (Big City)	
Yes	44
No	33
Currently live in urban areas	
Yes	40
No	23
Regions	
North	47
Northeast	24
Southeast	44
South	41
Middle West	32
Total	38

Source: The 2006 Brazil Demographic Health Survey (weighted)

White and black adolescents report a lower incidence of sexual activity than do brown and adolescents with other races. Moreover, adolescents who are the most educated (9 or more years of schooling) and work outside home appear to be at elevated risk of intercourse than are those who are less educated (0-4 and 5-8 years of schooling) and those who aren't working, respectively. The influences of childhood and current residence indicate that those who lived in big cities during their childhood and those who currently live in urban areas seems to be more likely of initiating sexual activity than those who lived in small cities during their childhood and those who are living in rural areas. Finally, Table 2 notes that adolescents who currently live in Northeast Brazil are the least likely to report having had intercourse.

Table 3 displays findings for the Cox Proportional Hazard Models. We present six models showing the risk of an adolescent's having first sexual intercourse. As explained below, these models differ according to the independent variables included in each of them.

Model 1: Religious affiliation

Model 2: Religious attendance

Model 3: Religious affiliation, socioeconomic, demographic, and community variables

Model 4: Religious attendance, socioeconomic, demographic, and community variables

Model 5: Religious affiliation and attendance, socioeconomic, demographic, and community variables

Model 6: Includes variables from Model 5 for all adolescent women, regardless of their marital status

Table 3 - Hazard ratios from the Cox proportional models showing the risk of never married adolescents' having first intercourse (age 15-19). Brazil, 2006

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Religious Affiliation						
Catholic	1.00		1.00		1.00	1.00
Traditional Protestant	0.82		0.77**		0.92	0.93
Pentecostal	0.56**		0.51**		0.70*	0.84
No Religion	1.42**		1.36**		1.04	1.11
Others	1.18		1.04		1.09	1.05
Religious Attendance						
> Weekly		1.00		1.00	1.00	1.00
Weekly		1.39**		1.47**	1.33*	1.27*
< Weekly		1.72**		1.79**	1.59**	1.47**
< Monthly		2.27**		2.36**	2.10**	1.98**
Never		2.44**		2.68**	2.32**	2.23**
Race/Color						
White			1.00	1.00	1.00	1.00
Black			1.04	1.05	1.05	1.07
Brown			0.88	0.87	0.88	0.99
Other			1.12	1.15	1.15	1.16
Age						
15			1.00	1.00	1.00	1.00
16			0.97	0.93	0.94	1.11
17			0.81	0.78	0.79	1.07
18			1.18	1.16	1.16	1.54**
19			1.31*	1.26	1.26	1.67**
Education						
0-4 years			1.00	1.00	1.00	1.00
5-8 years			0.84	0.90	0.89	0.75**
9 or more years			0.55**	0.60**	0.60**	0.41**
Work			1.26**	1.25**	1.26**	1.10
Childhood residence (Big City) [1]			1.28**	1.26**	1.26**	1.17**
Currently live in urban areas [2]			1.24†	1.23	1.23†	0.97
Regions						
North			2.33**	2.55**	2.57**	2.00**
Northeast			1.00	1.00	1.00	1.00
Southeast			1.68**	1.73**	1.75**	1.35**
South			1.95**	1.94**	1.95**	1.62**
Middle West			1.48**	1.52**	1.53**	1.40**
Cluster-level aggregate: mean education of the household head						
Low level			1.00	1.00	1.00	1.00
Middle level			0.96	0.96	0.96	1.00
High level			0.80**	0.76**	0.76**	0.79**
-2 Log-likelihood	9120,4	9040,1	8938,5	8858,9	8853,2	17867,0
N	1,876	1,876	1,876	1,876	1,876	2,461

Source: The 2006 Brazil Demographic Health Survey. † <0.1 *p<0.05 **p<0.01

1- Lived in a small town is the reference

2- Current living in rural areas is the reference

Table 3 indicates that both measures of religion are associated with the timing of first intercourse (Models 1 and 2). Model 1 reveals that relative to the Catholic Church, belonging to Pentecostal congregations is associated with delaying first sex in Brazil. In addition, the coefficients of Model 2 indicate that attendance at religious services is associated in a graded fashion with the hazard ratio of never-married adolescents having first sex: while adolescents who attend religious services weekly exhibit 1.39 times the risk of having sexual intercourse compared with those who attend more than weekly, among those who never attend the risk is 2.44 times higher when compared with the same group.

Results from Models 3 and 4 in Table 3 indicate that even when controlling for demographic, socioeconomic, and community variables, religious affiliation (Model 3) and religious service attendance (Model 4) are still associated with adolescent sexual initiation. Importantly, Model 3 reveals that when the association with those variables is controlled, never married adolescents who belong to traditional Protestant churches also have a statistically significant lower hazard ratio of engaging in sexual intercourse than Catholics.

Our subsequent model (Model 5) includes both measures of religion and also controls for demographic, socioeconomic, and community factors. It suggests that the introduction of the religious service attendance variable leads to a substantial reduction in the association between adolescent sexual initiation and the membership with traditional Protestant churches as well as with the absence of religious affiliation. In fact, Model 5 shows that only never-married girls who belong to Pentecostal churches are significantly less likely to initiate sexual activity than never-married Catholics, even when controlling for a measure of religiosity and other key factors. Finally, Model 5 also indicates that

attendance at religious service keeps its strong (and direct) association with timing of first sexual intercourse.

Nevertheless, as noted earlier, other factors may be at work in the apparent influence of religion here. Selectivity is one alternative explanation. Findings of this work, even controlling for socioeconomic, demographic, and community variables, reveal that the hazard ratios for religious denomination and religious service attendance are still statistically significant, suggesting that selectivity does not likely play a pivotal role here. The other two alternative explanations, reverse causation and social desirability bias, cannot be evaluated using the existing data. It is possible that Pentecostals—for whom nonmarital sex is a more serious violation of norms than for most other Christian groups—suffer from greater social desirability bias with both sex and religiosity questions. If so, the coefficients reported here may be overestimated. Such girls may have more interest in presenting themselves in a manner that will be viewed favorably by others. Consequently, they may find themselves embarrassed and may lie about their sexual behavior. However, should this bias exist, it would not likely account for the entire difference observed among Pentecostal and Catholic girls.

Finally, Model 6 reports results from the same variables as in Model 5, but includes all girls between 15 and 19 years, regardless of their marital status. They show no changes in terms of the significance of religious service attendance; however membership with Pentecostal churches is no longer significantly associated with adolescent sexual initiation in Model 6.

Associations between adolescent demographic, socioeconomic, community characteristics and timing of first sexual intercourse operate largely in predicted fashion. One exception is the race/color variable, which may no longer be a significant predictor of sexual initiation in Brazil. The hazard ratio of sexual initiation increases with age

when adolescents reach the age of 18 and 19 years (especially in Model 6). Not surprisingly, and contrary to our descriptive analysis (Table 2), education exercises a statistically significant negative association with initiation of sexual activity: the most educated girls (9 years or more of education) are at lower risk of sexual initiation when compared to those with 0-4 years of education, all else being equal. Moreover, adolescents who work outside home are more likely to engage in sexual activity than those who do not.

Adolescent women who spent their earliest years in an urban environment (who lived in big city or capital at age 12) are at higher risk of engaging in sexual activity than those whose early environment was rural areas or small cities. Like childhood residence, current residence seems to play a role, however, in a less extent. Those adolescents who currently live in urban areas are more likely to have had sexual activity than those who live in rural places. Moreover, the hazard ratios of region of residence show that girls who live either in North, or South, or Southeast, or Middle West of Brazil are at higher risk of sexual initiation than those living in Northeast. Finally, the hazard ratios for the cluster-level aggregate variable reveal that adolescent women who live in communities with the highest mean years of education of the household head exhibit the lowest hazard ratio of engaging in sexual activity.

Discussion

Adolescent women's sexual initiation differs significantly by religious affiliation and attendance at religious services in Brazil. Using data from the 2006 Brazil Demographic and Health Survey, multivariate analyses reveal that never-married adolescent women who belong to traditional Protestant or (especially to) Pentecostal churches are at lower risk of engaging in sexual intercourse than those who belong to the Catholic Church

(Models 3 and 5). This finding may indicate that traditional Protestant and Pentecostal churches are more effective at delaying first sex than are Catholic congregations. Also, multivariate analyses show that high attendance at religious services is associated with later initiation of sexual intercourse (Model 4). As suggested by the direct explanation of religious influence, adolescents with greater religious commitment may be more apt to reproduce in their actions their religious values and teachings.

As mentioned earlier in this study, adolescents who engage in premarital sexual relationships may face severe sanctions at their Pentecostal church, especially if they get pregnant. Therefore, they may consider their religious faith and/or religious sanctions when making choices about sex and reproduction. The hazard ratio for those belonging to Pentecostal churches in Model 5 may corroborate this assumption. It is noteworthy that most studies about Pentecostalism emphasize its pietism and conservative values. Pentecostal practical theology, for example, disapproves of a variety of types of mundane pleasures, such as modern coiffures or dress, the use of cosmetics and jewels, and as expected, places a ban on premarital sex (Mariano, 2004; Chesnut, 2003; Burdick, 1996). Different authors emphasizes that this forbidding regimen is sustained by social sanctions within closed communities (Burdick, 1996; Mariz, 1994).

Nevertheless, Models 5 and 6 also suggest that the direct association between age at first intercourse and religious affiliation decreases in magnitude and significance when controlling for attendance at religious services. However, this reduction does not mean that religious denominations are *less* associated with sexual initiation than they appear to be. In fact, such an association is most likely indirect, occurring (to some extent) through religious service attendance. Pentecostal churches, for instance, may be more effective at convincing adolescent women to avoid or postpone sexual intercourse because they

encourage girls to attend religious service regularly. Consequently those girls may be more exposed to the types of indirect influence of religion outlined by Smith (2003).

One source of indirect influence of religion on adolescents' lives is the increase of cultural capital (Smith, 2003). As pointed out by Mariz (1994) and Burdick (1996), unlike to traditional Catholics, Pentecostals have long been recognized in Brazil for their religious knowledge. They highlight, for instance, the importance of reading the Bible and knowing its contents well. The stimulus for reading, speaking, and forming opinion may encourage Pentecostals to become literate and develop speaking skills that can be useful for other aspects in their lives.

Religious involvement may also provide adolescents with leadership skills and social ties that affect opportunities and constrains that they may face (Smith, 2003). Mariz (1994) argued that because Pentecostal churches in Brazil very often consist of independent small groups, ordinary people may have ample opportunity to develop those skills. Leadership skills, another source of indirect influence of religion on adolescents' lives, increase youth capacities and confidence, which can enhance their well-being and life chances.

Moreover, Pentecostals in Brazil are recognized by promoting self-help networks that are national in scope. They usually offer not only psychological and spiritual support, but also financial, opening their homes to people in need, trying to help others to find jobs, or even offering child help support (Mariz, 1994). To some degree, these social ties may affect the use of time by young people, encouraging them to look for a (better) job or study harder in school, for instance. These connections, based on religious environment, can expand youth's aspirations, encouraging their development and maturity, and restrict their free time, which may indirectly affect their sexual and reproductive behavior as well. In addition, these networks of relational ties may affect adolescents' attitudes by

enabling parents and older religiously involved people to supervise and pay closer attention to them (Smith, 2003). Regarding this supervision, Burdick (1996) observed that Pentecostal parents, for instance, maintain strict authority over their daughters' relations with men in Brazil. They very often disapprove of extended courtships and marriage to non-*crentes*[5].

Conclusion

Increasing adolescent fertility and declining age at first sexual intercourse have been accompanied by a transformation in Brazil's religious landscape, which has been marked by the significant growth of evangelical Protestantism, led by Pentecostalism. In this article, we examined whether one of the most proximate determinants of fertility—age at first sex—is associated with religion affiliation and religious service attendance in Brazil.

Our results indicate a consistent association between Pentecostalism and premarital sexual initiation, even when controlling for attendance at religious service and key covariates. Never-married adolescents who belong to Pentecostal churches are at lower risk of engaging in sexual activity than Catholics. We interpret our results suggesting two kinds of explanations. First, Pentecostalism may have a *direct influence* on adolescent sexual behavior because it strongly prohibits certain kinds of behaviors, such as premarital sex, as well as imposes sanctions to those members who disobey its doctrine. Second, Pentecostalism has an *indirect influence* on adolescent sexual behavior through mechanisms by which religion may help to bring about a desired outcome. Affiliation with Pentecostal churches, for instance, has been associated with positive attitudinal and behavioral transformations that increase cultural and social capital,

[5] *Crentes* means believers, and it is a name popularly given to adepts of Protestant churches.

develop leadership skills, and provide support networks (including psychological, spiritual, and financial help). The nature of these social changes suggests that they may improve the self-esteem of Pentecostal members, which may indirectly affect other aspects of their lives.

Our results also suggest that church attendance is associated with sexual initiation among never-married adolescents in Brazil in a graded fashion. Those girls who attend more often are more likely to delay sexual activity than are those who attend less regularly. Again, *direct* and *indirect influence* of religion may play a role in this association. Adolescents who are more engaged with their church's activities are more likely to be exposed to conservative messages about sexual behavior and its appropriate contexts, and at the same time, influence may also be filtered through more indirect pathways, as suggested by Smith (2003).

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