Explaining Increases in Non-marital Births: Cohort Effects of Childhood Religion

and Family Structure on Non-marital Conceptions and Shotgun Weddings

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Abstract

This paper considers the effects of childhood religious attendance and family structure on the probability of having a non-marital first birth for five cohorts of American women using data from the 1988 and 1995 waves of the National Survey of Family Growth (NSFG). We also consider the risk of having a non-marital conception and the probability of having a "shotgun wedding" contingent upon having a non-marital conception. Results show relatively weak effects of childhood religious attendance on the probability of having a non-marital first birth, but stronger effects of childhood family structure. For older cohorts, growing up with two parents is associated with a lower probability of having a non-marital conception and a higher probability of having a "shotgun wedding", while for younger cohorts family structure is only associated with a lower probability of having a non-marital conception. Results also show that childhood religious attendance and growing up with two parents are associated with an older average age at first intercourse, reducing the time "at risk" of having a non-marital conception. Although both childhood religious attendance and family structure have significant protective effects on the probability of having a non-marital birth, declines in these two childhood experiences explain only about 10 percent of the increase in non-marital first births.

Change in the sequencing of marriage and childbearing exemplified by the increasing proportion of women having their first birth while unmarried has been one of the most important changes in American families in the last 40 years (Bianchi and Casper 2000). Until recent decades, non-marital childbearing was highly stigmatized. Social institutions including families, religious congregations, and governments tried to prevent young women from having children outside of marriage by a variety of practices which created and maintained norms, incentives and punishments, and reduced the opportunity for unmarried women to become pregnant. However, today one in three U.S. births is to an unmarried woman (Ventura and Bachrach 2000), and social disapproval for single motherhood has decreased considerably (Thornton and Young-DeMarco 2001). While just 9 percent of women born around 1945 had a non-marital first birth, 32 percent of women born around 1965 were unmarried when they had their first child (Wu 2008). Some of the increase in non-marital childbearing is attributable to increases in non-marital conceptions, but much of this change is due to declines in the prevalence of having a "shotgun wedding" after a non-marital conception (Akerlof, Yellen, and Katz 1996). Between 1930 and 1970, more than half of all women who experienced a non-marital conception married before the child's birth; by the 1990s, the proportion had decreased to one-quarter (Bachu 1999). What caused these changes?

Hypotheses for the increase in non-marital births are many and include macro-level changes in economic, technological, legal, and cultural domains (Ellwood and Jencks 2004 provide an excellent overview of various perspectives). A large body of previous research has not produced a consensus as to a single cause of change and, since many of these macro-level changes occurred contemporaneously, disentangling causality is difficult. This type of macro-level explanatory framework attempts to identify *why* a new pattern of family formation emerged, but does not specify the process by which new cohorts adopted new behaviors or identify which

individuals were the first adopters of them. Regardless of why it became less costly or more

attractive to have a non-marital birth, changes must have been occurring at the micro-level to

enable such a drastic change in family formation. This prompts us to consider changes in what

children were learning and internalizing about family formation and in how older generations were

enforcing and transmitting norms and expectations over this period of change.

In the United States, two institutions have been prominent in socializing children about

norms of sexual behavior: families and religious congregations.[2] These institutions play different

but (potentially) complimentary roles in teaching children values and enforcing norms and rules

about sexual behavior and family life. Slightly before non-marital birth rates began to sharply

increase, childhood religious socialization and family structures began changing. As Figure 1

shows, both the percentage of children living with two biological parents at age 14 and the

percentage of children who attended religious services weekly at age 14 declined a great deal

between cohorts born from 1944 to 1974.[3] Yet relatively little research considers how changes in

either of these aspects of childhood socialization could have contributed to changes in the

percentage of children born outside of marriage and most prior work considers period effects,

instead of changes in cohorts, which are often the source of social change (Ryder 1965).

[Insert Figure 1 about here.]

This paper examines how an individual's childhood family structure and religious

participation influence her adult family formation behavior. Specifically, we consider whether a

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[2] In some countries, other institutions such as the state, the education system, or the health care system may be
important, but these institutions play a relatively weak role in the U.S., especially during the period we consider.
[3] The percentage of adults who report having no religious preference has also grown in recent years (Hout and Fischer
2002 discuss), but this is of less consequence for our research questions because of how late these changes took place.
Hence, we do not consider it in this paper.

woman had a non-marital first birth, whether she conceived her first birth while unmarried and, if she was unmarried, whether she married prior to the birth in what is colloquially referred to as a "shotgun wedding." We also consider whether age at first sexual intercourse is a mechanism by which childhood socialization influences the probability of having a non-marital birth. By comparing the effects of religion and family structure across cohorts, we show how the influence of these two institutions has changed. We also estimate how changes in the prevalence of two-parent families and religious practice may have affected non-marital birth rates across cohorts.

Conceptual Framework

Sociological and anthropological research suggests that there are many ways that humans have organized families and reproduction (Goode 1964 provides an excellent overview). Particular cultures and social groups vary in their marriage and partnering patterns, the age at which women begin childbearing, ideal and actualized levels of fertility, and household composition. In the United States, and in many other countries, families and religious institutions have historically played a very strong role in transmitting and enforcing norms and rules about sexual behavior and family life (Stolzenberg, Blaire-Loy, and Wait 1995 discuss). They affect the sexual behavior and family formation of young people through socialization, and by monitoring, sanctioning and rewarding particular behaviors and attitudes. Both families and religious institutions socialize children to particular patterns of family life by providing role models, imparting ideals and formal teachings about family life and appropriate contexts for sexual behaviors, and infusing cultural meanings to parenthood, sexuality, and marriage or partnering. Most families and many organized religious groups attempt to reinforce and maintain particular patterns of family life by providing

rules about social and sexual behavior for adolescents and young adults and by monitoring and rewarding or punishing particular behaviors.

Families as institutions achieve this socialization of children largely through parenting behaviors and role-modeling. Parents impart to children values and norms about family life through what they say about families, the example they set in their own family life, and the other families with whom they socialize. Parents may also affect their children's family formation by setting particular rules and/or rewards and punishments regarding dating, sexual behavior, or partner choices. For teenagers, parents may also be important in providing or denying access to contraception or advice and treatment from medical and reproductive health professionals. As their children age, parents may continue to be influential by asking about and encouraging or discouraging their children's marriage or childbearing plans, or contributing money to wedding plans or baby expenses. Although the relative importance of each of these mechanisms is still under investigation, research confirms that parents often successfully transmit values and attitudes to their children about marriage, family life, and fertility (see especially Axinn and Thornton 1993, which also discusses effects of children on parents).

Many aspects of parenting and families may affect children's socialization, but family structure may be particularly influential for children's adult family formation. By family structure, we are referring to the combination of adults that children lived with as they were growing up. Some common family structures include two married biological parents, a single mother, a biological parent and a step-parent or a parent's cohabiting partner, no biological parents but other relatives such as grandparents, as well as many other arrangements. Family structure is important because it influences what the child experiences of family life, the amount of contact and the quality of interaction that the child has with her mother and father, as well as the material and

parenting resources available to children. As McLanahan and Percheski (2008) argue, family structure affects parenting by influencing family income, parental stress and mental health, and the amount of time parents have available to supervise and teach children. Most previous research finds that children growing up with two married parents have considerably better educational and social outcomes, including lower teenage pregnancy rates and later ages at romantic partnership formation which are both associated with more stable marriages and less non-marital childbearing. For all these reasons, we may expect that women who grew up with two parents will have lower odds of having a non-marital birth and that the increasing percentage of children growing up in other family structures will explain some of the increases in non-marital births.

Organized religion influences sexual behavior and family formation among adherents by creating formal rules and performing regulatory functions, socializing adherents to a set of norms and values, and creating and maintaining a community that holds and promotes certain values (Pearce 2002; Wilcox and Wolfinger 2007 provide two good examples of research in this area). Most religions proscribe the set of relationships and circumstances in which sexual behavior, marriage, and childbearing are acceptable. These rules may include who are appropriate marriage partners, when sexual activity in relationships is allowed (or even required), and what methods of regulating fertility are appropriate. In many historical contexts, it was religious institutions and leaders, not the state, who had the official authority to recognize and dissolve marriages. While there is considerable variation across religious institutions in the severity of restrictions for marriage and sexual behavior, most religious groups in the United States have regulations regarding marriage and sexual behavior, and most religious traditions in the United States consider

married parenthood as the ideal context for childrearing (Edgell 2005; Wilcox 2004).[4] Some

religious institutions provide formal mechanisms to sanction transgressors and others withhold

membership privileges or positions of honor or respect in the community from transgressors.

Similarly, religious leaders may refuse to perform clerical services – baptisms, weddings or bar

mitzvahs – for members who violate group norms, particularly in publicly observable ways.

In addition to explicit rules and regulatory mechanisms, religious institutions also influence

family formation behaviors by socializing adherents to a set of values and norms, both directly

about sexual behavior and family life but also more broadly about relationships, responsibility and

obligations. Religious institutions provide a community which may be involved in encouraging

particular behaviors or values. Young adults and teenagers may be influenced by the examples of

family life set by older adults in the congregation or by the availability of a peer group holding

similar values and expectations about sexual behavior and family formation. Indeed, recent

evidence confirms that religion still has a powerful influence on family formation and the meaning

people give to family life in the contemporary United States (Brewster et al. 1998; Cochran and

Beeghley 1991; Edgell 2005; Lehrer 2000; Sander 1993; Wilcox 2004).[5]

Using Cohorts to Study Family Change

Although much research suggests that regular childhood religious attendance and growing

up with two parents reduces the probability of having a non-marital birth, none of this research

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[4] However, many religious groups have shown considerable acceptance for individuals who deviate from this norm
(Cochran and Beeghley 1991; Gay, Ellison and Powers 1996; Edgell 2005). Nonetheless, married parenthood remains
the ideal for most religious groups in the United States.
[5] Two other areas of research have also received special attention. Family demographers have long studied the effects
of religion on married women's fertility as well as the rate and patterns of religious intermarriage (Westoff and Jones
1979 may be the most importantexample). However, this literature has been primarily interested in tracking rates and
trends and has not provided much theoretical discussion of these patterns or their causes and implications. More
recently, researchers have become interested in religion in the context of understanding HIV/AIDS spread and
prevention in sub-Saharan Africa (Takyi 2003 provides one example).

considers differences between cohorts in the effects of these childhood experiences. Since we are

interested in how changes in childhood religious attendance and family structure over time have

contributed to increases in the non-marital birth rate, considering cohorts is especially important.

Social scientists often classify social change as occurring in two ways: either through changes that

affect all people at a given point in time in the same way (a period effect) or by differently

affecting people based on their ages and the historical conditions under which they grew up (a

cohort effect). To consider how childhood circumstances affect family formation during young

adulthood, a cohort perspective is most appropriate since it is the conditions prevailing during

adolescence that we expect to be most influential (see Ryder 1965 for a more general discussion of

cohort change). In this paper, we detail how the influences of family and religious attendance on

family formation and non-marital childbearing have changed across birth cohorts.

Data and Analytic Strategy

Data

To examine our research questions, we use data from the National Survey of Family

Growth (NSFG), a nationally representative survey of women in the United States ages 15-44. The

National Survey of Family Growth is an ideal data source for our analyses because it includes

complete fertility and marital histories as well as information on childhood religious attendance

and family structure at age 14. We use data from the 1988 and 1995 surveys because these data

allow us to consider family formation for the birth cohorts that came of age during the periods in

which the rates of non-marital births, non-marital conceptions, and shotgun weddings changed

drastically. The sample is all women who had a child by age 28 and had complete marriage and

fertility histories. We use a low age cutoff because the risk of having a non-marital birth is highest

at younger ages.[6] Fewer than 5 percent of respondents are missing data on marriage or fertility histories so we are not concerned that using complete cases may substantially bias our estimates.

We consider five birth cohorts of American women: 1944-1948; 1949-1953; 1954-1957; 1958-1962; and 1963-1967. In choosing these birth cohorts, we considered two things. First, we made sure that each cohort had a large number of cases. Second, we grouped birth years by common family formation experiences and checked that our cohort choices corresponded with the observed patterns in the single-year data. Thus, we cut cohorts wherever there was a pronounced change in the chance of having a non-marital conception, a non-marital birth, or a shotgun wedding. The oldest cohort began high school in the late 1950s and celebrated their 30th birthdays in the mid-1970s; the youngest cohort reached these milestones in the late 1970s and mid-1990s.

Outcome Variables

We consider three outcomes. First, we consider whether a woman's first birth was non-marital. Next, we consider whether a woman's first birth was a result of a non-marital conception. If the mother was unmarried or had been married less than eight months[7] when the child was born, we categorize it as a non-marital conception. The final outcome is whether a non-marital conception led to a shotgun wedding. For this outcome, we consider only women who had a non-marital conception. We code them as having a shotgun wedding if they married less than eight months before the baby's birth.

Descriptive statistics for the dependent variables show a marked increase across cohorts in the proportion of women having a first birth outside of marriage. Very few women born in the

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[6] Results do not change dramatically when we use age 31 as our cutoff.
[7] Previous research on non-marital conceptions and shotgun weddings has used seven months, instead of nine months, to prevent inclusion of marital conceptions that resulted in premature births. We also conducted analyses using a nine month construction and found no notable differences in our results.

oldest cohort (1944-1948) had their first child outside of marriage (8.8 percent) in contrast, for the youngest cohort having a first birth outside of marriage was about four times as common as it was for women born 20 years earlier. Nearly one-third of first births for women born 1963-1967 were to unmarried women (Table 2, Row 1). Changes in the proportion of non-marital first births merit attention not only because of the effects of growing up with a single parent on children (McLanahan and Sandefur 1994; Sigle-Rushston and McLanahan 2004), but also because they represent a fundamental shift in the lives of American women.

For a non-marital birth to occur, three events must occur. First, an unmarried woman must become pregnant. Second, she must carry the pregnancy to term. Third, she must remain unmarried for the duration of the pregnancy; i.e. she must not have a "shotgun wedding." Data on abortion are notoriously unreliable in all major surveys including the NSFG, which includes much more complete information on abortion than other surveys. This makes it nearly impossible consider the second step in this process – decisions about whether to carry a non-marital conception to term or terminate the pregnancy (but see Adamczyk and Felson 2008). Therefore, we consider only conceptions that result in live births. For the oldest cohort of women we consider, non-marital conceptions were common, with 27.3 percent of first births resulting from a non-marital conception. For the youngest cohort of women, the probability that a first birth was conceived outside of marriage was much greater; nearly one in two women born 1963-1967 conceived their first child while unmarried (Table 3, Row 1).

Of course, women who conceive a pregnancy outside of marriage may still have a marital birth by having what is colloquially known as a "shotgun wedding." For the oldest birth cohort of women who became pregnant outside of marriage, having a shotgun wedding was the norm. Over two-thirds of women born 1944-1948 whose first live birth was conceived outside of marriage

married before the child was born. By the youngest birth cohort, the practice of marrying after a non-marital conception had become much less common; only 31.7 percent of women born 1963-1967 who became pregnant while unmarried wed before having their first child. Thus, increases in the proportion of women having their first birth outside of marriage were driven not only by non-marital conceptions, but also by the decline of shotgun weddings.

Predictor Variables

There are many aspects of religious practice, identity, and salience that may influence family formation processes. In this paper, we consider one such measure: the frequency of attendance at religious services at age 14. Specifically, we code women as having attended religious services on a weekly basis or less frequently. We think considering weekly religious attendance makes sense because religious institutions are likely most influential in exerting social control and setting community norms if their members participate in the community frequently and consistently. Slightly more than 80 percent of women from the first cohort (women born 1944-1948) attended religious services weekly during their childhoods. In the youngest cohort (women born 1963-1967), only 60 percent of women attended religious services weekly when they were children (see Table 1). This represents a 25 percent drop over a 20 year period.

We also consider the effects of childhood family structure on family formation behavior. The measure of family structure that we use is whether the woman reported that she lived with both biological parents at age 14. Although a relatively crude measure of childhood family structure, data constraints preclude the possibility of using a more nuanced measure, and this measure has been used in many previous analyses (see Sigle-Rushton and McLanahan 2004 for one review). Like childhood weekly religious attendance, the percentage of children growing up

with two biological parents declined markedly over this period. 78 percent of the oldest cohort grew up in a household with both of their biological parents. In contrast, in the youngest cohort of women, slightly less than 60 percent were living with both biological parents at age 14 (Table 1), a 23 percent decline.

Control Variables

Research on family structure effects and on differences between religious attenders and non-attenders faces considerable challenges in disentangling questions of causality and selection. The characteristics of people who attend religious services and raise their children in married families have changed over time. If the characteristics of these groups have changed along other dimensions – such as education – that are associated with particular family formation patterns, we may mistake changes in population characteristics for changes in the effects of religion or family structure. To better compare the influence of religion and family structure across cohorts, we control for characteristics that may affect family formation and are known to be associated with family structure or religious practice. These include the respondent's race/ethnicity (white, black, Latino, other), maternal education (less than high school, high school degree only, some college, college degree or more), whether they are an immigrant, and whether they grew up in the South.

Descriptive statistics show that changes in childhood religious socialization and family structure were not the only changes across cohorts. The share of the population composed of non-Hispanic whites decreased from 84 to 66 percent across cohorts , and the percentage of the population made up of immigrants grew dramatically – up from 3.3 percent of women born from 1944-1948 to 12.7 percent of women born from 1963-1967. Levels of maternal education also

increased dramatically over this period. A smaller share of younger cohorts resided in the South, although geographic changes were certainly not dramatic.

For a full presentation of the independent variables, see Table 1.

[Insert Table 1 about here.]

Analytic Strategy

We start the analysis by presenting the overall rates of non-marital births, non-marital conceptions and shotgun weddings by birth cohort, childhood religious attendance, and childhood family structure. Next, we consider the association between family formation behavior and childhood religious attendance and family structure net of other characteristics. To do this, we use logistic regression models. We then compare the coefficients associated with the religion and family structure variables across birth cohorts to see how the effects have changed across birth cohorts.[8] Comparing coefficients across logistic regression models without taking correlated errors and differences in explained variance into account may lead to inaccurate conclusions, so our findings about changes in effects should be considered tentative (Allison 1999).

Results

Descriptive Differences by Childhood Religious Attendance

Table 2 presents descriptive statistics for the percentage of first births that were non-marital by birth cohort and childhood religious attendance. For the oldest birth cohort, women who did not attend weekly religious services as children were about 30 percent more likely to have a non-

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[8] In models not shown here but available upon request, we also considered interactions between childhood religious attendance and family structure.

marital first birth than were women who attended church regularly. For the next two birth cohorts, differences between women who attended religious services weekly and those who did not were smaller, although still noticeable. For the youngest two birth cohorts, large differences also emerge between women who attended religious services weekly as children and those who did not; these differences are especially pronounced for women born 1958-1962.

[Insert Table 2 about here.]

Table 3 presents the percentage of first births resulting from non-marital conceptions and the percentage of non-marital conceptions that resulted in a shotgun wedding by birth cohort and childhood religious attendance. For all cohorts except those born from 1954 to 1957, women who attended religious services weekly as children were less likely to have their first birth result from a non-marital conception. Differences in shotgun wedding prevalence by childhood religious attendance are less pronounced. Women who grew up attending weekly religious services were considerably more likely to have a shotgun wedding in three of the five cohorts. However, childhood church attenders were substantially less likely to resolve a non-marital conception with a shotgun wedding in the 1949-1953 birth cohort.

[Insert Table 3 about here.]

Descriptive Differences between Women by Childhood Family Structure

Differences in the probability of having a non-marital first birth by childhood family structure are much greater and more consistent than by childhood religious attendance. As Table 2

shows, women growing up with two parents were substantially less likely to have a non-marital birth than were women who did not grow up with two parents. Especially pronounced were differences for women born 1954-1957; 14.9 percent of women in this birth cohort who grew up with two parents had a non-marital first birth, compared with 36.7 percent of women who grew up with a different family structure. Although differences by family structure are largest for this cohort, differences are substantial in all five birth cohorts that we consider in this analysis.

Table 2 suggests that women who grew up with both parents have lower risks of having a non-marital first birth. Is this a result of lower non-marital conception rates, high shotgun wedding rates, or both? Table 3 presents descriptive differences in the rates of non-marital conceptions and shotgun weddings by childhood family structure. Women growing up with two parents were substantially less likely to conceive their first child outside of marriage, and these differences appear to be holding relatively constant across cohorts. Even in the youngest cohort (women born 1963-1967), women who grew up with two parents were 30 percent less likely to conceive their first child outside of marriage than other women. Differences in shotgun wedding rates are substantial, although raw differences appear to be shrinking across cohorts. (This may be attributable to the lower probability of having a shotgun wedding for all groups across cohorts.) Nonetheless, across cohorts, women who grew up with two parents were more likely to have a shotgun wedding than other women.

Results: Non-marital First Births

Table 4 presents odds-ratios from logistic regression models predicting having a non-marital first birth for five cohorts of women born between 1944 and 1967. For each of the five birth cohorts, childhood religious attendance is associated with between a 21 and 36 percent

decrease in the odds of having a non-marital first birth, controlling for other variables. Although the coefficient does not attain statistical significance at the .05 level in three of the models, the pattern of findings suggests that weekly religious attendance may be negatively associated with having a non-marital first birth. Furthermore, the association with childhood religious attendance is not changing much with younger birth cohorts, although childhood religious attendance had the smallest effects on the youngest birth cohort of women. The association appears especially strong for the 1949-1953 and 1958-1962 cohorts, for whom the protective effect is both relatively large and statistically significant.

While the protective effects of childhood religious attendance on the risk of having a non-marital first birth are somewhat small and not always statistically significant, the effects of family structure appear to be much stronger. Results from Table 4 show that growing up in a two-parent home is associated with a decreased probability of having a first non-marital birth in all but the oldest cohort. Furthermore, these effects are relatively large compared to the effects of childhood weekly religious attendance; growing up with two parents is associated with decreases in the odds of having a non-marital first birth, ranging from a 22 percent to a 57 percent decrease. The effects of childhood family structure on the probability of having a non-marital first birth do not seem to be decreasing across cohorts, although effects are smaller in the youngest birth cohort than the three preceding cohorts.

[Insert Table 4 about here.]

Childhood religious attendance and family structure are not the only statistically significant predictors of having a non-marital first birth. In every cohort, black women are much more likely to have a non-marital first birth than are white women, and the effects size dwarfs that of

childhood religious attendance and family structure. Having a mother who did not finish high school also substantially increases the odds of having a first non-marital birth, although this effect may be diminishing over time – as shown by the marginally significant coefficient for having a mother with less than a high school education for the youngest birth cohort. None of the other predictors have consistent effects on the probability of having a first non-marital birth, although some predictors have statistically significant and large effects for particular cohorts.

Results: First Birth from a Non-marital Conception

Results from Table 4 suggest that childhood family structure has large, negative effects on the probability of having a non-marital first birth for four of the five birth cohorts. Effects are smaller and not consistently statistically significant for childhood weekly religious attendance. Results also show that African-Americans are much more likely to have a non-marital first birth than white women in all five of the birth cohorts considered. Are the predictors of non-marital conceptions the same as for non-marital births? Table 5 shows the results from models of the probability of having a first birth which originated from a non-marital conception. These results show that childhood weekly religious attendance diminishes the odds of having a first birth from a non-marital conception for women born 1949-1953 and 1958-1963. These results suggest that for some cohorts, childhood religious attendance may affect the probability of having a non-marital first birth by reducing the odds of having a non-marital conception.

For the youngest four birth cohorts, growing up with two biological parents has relatively large effects on the probability of having a non-marital first conception, diminishing the odds between 32 and 43 percent. Interestingly, the effects of growing up with two parents appear to be increasing across cohorts.

[Insert Table 5 about here.]

Other characteristics, especially being black and having a mother who did not complete high school, also have strong associations with non-marital conceptions. African-Americans had at least 460 percent higher odds of having a non-marital first conception in all five cohorts, dwarfing the size of effects for any of the other variables included in this analysis. For the oldest four cohorts, having a mother who did not complete high school also associates with a higher probability that the first birth was the result of a non-marital conception.

Results: Shotgun Weddings

One of the main ways women prevent having non-marital births is by avoiding non-marital conceptions. Another important way women avoid non-marital births is by having a shotgun wedding – a wedding that occurs after finding out about the pregnancy but before having the child. Table 6 presents estimates from models which predict the probability of having a shotgun wedding for women who conceived their first child outside of marriage. Childhood weekly religious attendance greatly increased the odds of having a shotgun wedding for only one birth cohort – women born 1958-1962.

Unlike for the first two outcomes – having a non-marital first birth and having a non-marital conception – the effects of family structure on shotgun wedding probabilities are not as consistent. For women born 1949-1953 and 1954-1957, growing up in a two-parent family is associated with substantially elevated odds of having a shotgun wedding. However, for the other three cohorts there are no statistically significant effects of growing up with two parents. This

suggests that most of the protective effect of growing up in a two-parent home results from lower

odds of conceiving a child outside of marriage.

[Insert Table 6 about here.]

Few other predictors were consistently significant predictors of having a shotgun wedding.

Having a mother who did not finish high school appears to deter having a shotgun wedding for

some cohorts, and black women were much less likely to have a shotgun wedding than were white

women in all five cohorts.

A Possible Mechanism: Models Including Age at First Sex

Although this paper cannot identify and test all of the possible mechanisms through which

childhood religious attendance and family structure influence family formation, we are able to

consider one possible mechanism. We hypothesize that childhood religious practice and family

structure may affect non-marital childbearing by influencing the average age at first intercourse. In

order to consider this mechanism, we model age at first intercourse using the childhood

characteristics from our previous models. (The full tables of results are available from the authors

upon request.) Both childhood religious attendance and family structure are consistently and

significantly associated with an older age at first intercourse. Furthermore, when age at first

intercourse is included in models predicting family formation, childhood religious attendance is

rendered nonsignificant for every cohort. Thus, the effects of childhood religious attendance on

family formation appear to work through age at first intercourse. Including age at first intercourse

decreases the coefficient associated with childhood family structure, but does not render this

coefficient nonsignificant for most cohorts. This suggests that growing up with two parents influences family formation partially but not entirely by increasing the age at first intercourse.

Estimating the Size of Effects

To estimate how changes in religious socialization and family life have contributed to the increase in non-marital births in the United States, we present results from simple simulations which estimate the non-marital first birth rate for the youngest birth cohort if childhood religious attendance and family structure were similar to what they had been for the oldest cohort. To do so, we predict the probability of having a non-marital birth for the youngest cohort from a pooled regression model holding all other demographic characteristics at the mean and altering only the probability of attending religious services weekly or growing up with two biological parents.

Not surprisingly, effects of childhood religious attendance are relatively small. If childhood religious attendance had remained at the 1944-1948 levels, the probability of having a non-marital birth would have been .303. This is only a small decline from the .311 probability using the probability of childhood religious attendance for the youngest birth cohort. Differences are somewhat more pronounced but still not huge for childhood family structure. The probability if childhood family structure had stayed constant was .294, while the observed probability was .317. According to this, the proportion of first births that were non-marital would have been 7 percent lower had childhood family structure remained at its 1944-1948 level. If both childhood religious attendance and family structure had remained at their 1944-1948 level, the predicted probability of having a non-marital first birth would have been .290, about 10 percent lower than the predicted probability of having a non-marital first birth using the youngest birth cohort's probability of growing up attending religious services weekly and living in a two-parent household. This

suggests that although changes in childhood socialization explain some portion of changes in adult family formation, their explanatory power is not overwhelming.

Discussion, Conclusions, and Implications

This analysis finds that childhood family structure is strongly associated with a woman's marital status at the conception and birth of her first child. Women who grew up in a two-parent family have considerably lower odds of having a non-marital conception or first birth. Across cohorts, the association between growing up in a two-parent family and having a non-marital first birth or a first birth resulting from a non-marital conception has stayed about the same. However, childhood family structure has weaker associations with the probability of having a shotgun wedding; for women born 1949-1957, growing up with two parents is associated with an increased likelihood that a shotgun wedding followed a non-marital conception, but for other cohorts there is no significant association with childhood family structure.

In contrast to the strong associations between childhood family structure and adult family formation behaviors across cohorts, a woman's childhood religious attendance is only weakly related to family formation for most cohorts. For the 1958 to 1962 cohort, childhood religious attendance is significantly associated with more traditional childbearing patterns, but for other cohorts there is little or no effect. Additional analyses show that weekly church attendance and growing up with both parents is associated with increased age at first intercourse and that the effect size is similar across cohorts.

This analysis provides support for the hypothesis that the declining proportion of children growing up with both parents has contributed to the increasing non-marital birth rate, primarily through increases in non-marital conceptions but also through decreases in shotgun weddings.

Although there are not strong associations between a woman's childhood religious attendance and her odds of having a non-marital conception or shotgun wedding for most cohorts, childhood religious attendance is associated with a substantially later age at first sexual intercourse. However, the effects of childhood family structure and religious practice are not overwhelmingly large; if childhood family structure and religious attendance had remained at the levels of the 1944-1948 cohorts, the probability of having a non-marital first birth would have been only 10 percent lower for the youngest cohort (1963-67). Thus, although changes in childhood experiences appear to explain some of the changes in non-marital childbearing, they likely do not account for much.

Although this analysis suggests that relatively little of the change in the percentage of children born outside of marriage is attributable to changes in the percentage of children who grew up with two biological parents or attended religious services weekly, it considers only individual-level effects and hence may underestimate the true effects of these changes on the non-marital birth rate. Future work should also consider the possibility that community-level childhood experiences – for example, the proportion of children raised attending church or growing up with two biological parents – may exert stronger effects on the probability of having a non-marital birth than do individual-level variables treated in isolation. As such, future research should consider both the effects of individual's experiences and the effects of community-level childhood socialization.

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Table 1. Means and Standard Deviations of Independent Variables by Birth Cohort

	Born 1944-48	Born 1949-53	Born 1954-57	Born 1958-62	Born 1963-67
N	898	1801	2103	2158	1360
Childhood Weekly Religious Attendance (%)	80.4 (39.8)	73.4 (44.2)	67.0 (47.0)	67.4 (46.9)	60.9 (48.8)
Lived with Both Parents at Age 14(%)	78.0 (41.4)	77.4 (41.9)	75.9 (42.3)	69.6 (46.0)	58.7 (49.2)
Race (%)					
White	84.0 (36.7)	80.8 (39.4)	79.1 (40.6)	79.4 (40.5)	65.5 (47.5)
Black	11.0 (31.3)	14.6 (35.3)	14.9 (35.6)	14.9 (35.6)	15.4 (36.1)
Latino	.2 (5.2)	.5 (7.3)	1.2 (11.1)	.8 (8.7)	15.1 (35.8)
Other	4.7 (21.2)	4.1 (19.9)	4.7 (21.2)	5.0 (21.7)	4.0 (19.5)
Immigrant (%)	3.3 (17.8)	2.9 (16.9)	3.2 (17.7)	2.1 (14.3)	12.7 (33.3)
Maternal Education (%)					
High School Dropout	53.4 (50.0)	46.9 (49.9)	47.6 (50.0)	39.1 (48.8)	37.1 (48.3)
High School Only	34.5 (47.5)	39.5 (48.9)	39.1 (48.8)	43.5 (49.6)	45.2 (50.0)
Some College	6.9 (25.3)	8.7 (28.2)	7.1 (25.7)	8.0 (27.1)	9.6 (29.5)
College Graduate	5.3 (22.3)	4.9 (21.6)	6.3 (24.2)	9.3 (29.1)	8.1 (27.3)
Grew up in the South (%)	36.9 (48.3)	34.9 (47.7)	32.7 (46.9)	31.6 (46.5)	28.7 (45.3)

Source: National Survey of Family Growth 1988, 1995.
Notes: Sample is limited to women who had a first birth by age 28 and had complete marriage and fertility histories. All data are weighted.

Table 2. Means and Standard Deviations for the Percentage of First Births That Are Non-Marital, by Birth Cohort, Childhood Religious Attendance, and Childhood Family Structure

	Born 1944-48	Born 1949-53	Born 1954-57	Born 1958-62	Born 1963-67
All	8.8 (28.3)	14.6 (35.3)	20.1 (40.1)	23.7 (42.5)	31.9 (46.7)
By Childhood Religious Attendance					
Weekly	8.1 (27.3)	14.2 (34.9)	19.0 (39.2)	21.5 (41.1)	29.7 (45.7)
Less than Weekly	11.4 (31.9)	15.8 (36.5)	22.4 (41.8)	28.2 (45.0)	35.4 (47.9)
By Childhood Family Structure					
Two-parent Family	7.2 (25.8)	10.9 (31.2)	14.9 (35.6)	18.6 (38.9)	26.0 (43.9)
Other Family Structure	14.4 (35.2)	27.2 (44.6)	36.7 (48.2)	35.4 (47.8)	40.3 (49.0)

Source: National Survey of Family Growth 1998, 1995.

Notes: Religious attendance and family structure are from adult respondents' reports of their life at age 14. All data are weighted.

Table 3. Means and Standard Deviations for Percentage of First Births Resulting from Non-Marital Conceptions and of Nonmarital Conceptions Resulting in Shotgun Weddings by Birth Cohort, Childhood Religious Attendance, and Childhood Family Structure.

	Nonmarital Conception					Shotgun Wedding				
	Born 1944-48	Born 1949-53	Born 1954-57	Born 1958-62	Born 1963-67	Born 1944-48	Born 1949-53	Born 1954-57	Born 1958-62	Born 1963-67
All	27.3	32.2	37.0	37.6	46.7	68.0	54.6	45.6	37.0	31.7
	(44.6)	(46.7)	(48.3)	(48.4)	(49.9)	(46.7)	(49.8)	(49.8)	(48.3)	(46.6)
Religious Attendance										
Weekly	26.6	30.5	36.6	35.5	43.6	69.5	53.5	48.2	39.3	31.9
	(44.2)	(46.1)	(48.2)	(47.8)	(49.6)	(46.2)	(49.9)	(50.0)	(48.9)	(46.7)
Less than Weekly	30.1	36.7	37.7	42.0	51.6	62.2	57.0	40.4	32.8	31.4
	(46.0)	(48.2)	(48.5)	(49.4)	(50.0)	(48.9)	(49.6)	(49.1)	(47.0)	(46.5)
Family Structure										
Two-parent Family	25.8	28.1	32.5	30.4	40.1	72.3	61.1	54.2	39.0	35.2
	(43.8)	(44.9)	(46.8)	(46.1)	(49.1)	(44.9)	(48.8)	(49.9)	(48.8)	(47.8)
Other Family Structure	32.6	46.2	51.1	53.9	56.0	55.8	41.0	28.2	34.3	28.0
	(47.0)	(49.9)	(50.0)	(49.9)	(49.7)	(49.9)	(49.3)	(45.1)	(47.5)	(45.0)

Source: National Survey of Family Growth 1988, 1995.
Notes: Religious attendance and family structure are from adult respondents' reports of their life at age 14. All data are weighted.

Table 4. Odds Ratios from Logistic Regression Models Predicting Having a Non-Marital First Birth by Childhood Family and Demographic Characteristics

	Born 1944-48	Born 1949-53	Born 1954-57	Born 1958-62	Born 1963-67
Weekly Religious Attendance	.66	.69*	.79~	.64**	.79~
	(.21)	(.12)	(.10)	(.08)	(.11)
Two-Parent Family	.78	.55**	.43**	.54**	.62**
	(.23)	(.09)	(.06)	(.06)	(.08)
Race					
Black	17.11**	12.26**	9.52**	8.63**	9.94**
	(5.43)	(2.22)	(1.46)	(1.27)	(1.86)
Latino	---	.47	6.18**	.40	2.19**
		(.86)	(2.56)	(.39)	(.44)
Other	.36	2.98**	.76	2.07**	1.65
	(.40)	(.95)	(.27)	(.49)	(.59)
Maternal Education					
Less than High School	1.38	2.57**	1.35*	2.13**	1.32~
	(.42)	(.49)	(.19)	(.27)	(.19)
Some College	1.36	1.29	.86	1.27	.54*
	(.80)	(.45)	(.24)	(.29)	(.14)
College Graduate	.61	3.12**	1.22	.71	.38**
	(.50)	(1.09)	(.34)	(.17)	(.11)
Immigrant	2.11	2.53*	1.09	.57	.39**
	(1.25)	(.94)	(.36)	(.25)	(.10)
Grew up in the South	.60	.76	1.08	.84	.74~
	(.19)	(.14)	(.15)	(.11)	(.12)
Intercept	.08**	.10**	.26**	.30**	.50**
	(.03)	(.02)	(.04)	(.04)	(.07)
Pseudo R2	.21	.24	.19	.17	.15
N	898	1801	2103	2158	1360

Source: National Survey of Family Growth 1988, 1995.

Notes: Religious attendance and family structure are from adult respondents' reports of their life at age 14. Standard errors in parentheses. The reference group is a White native-born woman whose mother had a high school degree and who grew up outside the South with a single parent and did not go to religious services regularly. Significance levels are the following: ~ p<.10; * p<.05; ** p<.01.

Table 5. Odds Ratios from Logistic Regression Models Predicting that a Woman's First Birth Resulted from a Non-Marital Conception by Her Childhood Family and Demographic Characteristics

	Born 1944-48	Born 1949-53	Born 1954-57	Born 1958-62	Born 1963-67
Weekly Religious Attendance	.98	.70**	.89	.76**	.81~
	(.20)	(.09)	(.10)	(.08)	(.10)
Two-Parent Family	.79	.68**	.62**	.61**	.57**
	(.14)	(.08)	(.07)	(.06)	(.07)
Race					
Black	6.63**	7.14**	6.60**	7.05**	7.81**
	(1.26)	(.95)	(.81)	(.86)	(1.28)
Latino	---	1.91*	1.54*	1.27	2.33**
		(.49)	(.30)	(.22)	(.43)
Other	1.83	1.41	1.57~	1.34	1.91~
	(.75)	(.41)	(.42)	(.35)	(.74)
Maternal Education					
Less than High School	2.12**	1.47**	1.30*	1.42**	1.03
	(.40)	(.18)	(.14)	(.16)	(.15)
Some College	1.55	.89	.73	.70~	.66~
	(.55)	(.19)	(.15)	(.13)	(.14)
College Graduate	1.64	1.42	.95	.70~	.63~
	(.62)	(.37)	(.21)	(.14)	(.15)
Immigrant	1.17	.72	.71~	.68*	.35**
	(.43)	(.16)	(.13)	(.13)	(.08)
Grew up in the South	.65*	.77*	.88	.78*	.82
	(.12)	(.10)	(.10)	(.09)	(.12)
Intercept	.23**	.53**	.59**	.79~	1.13
	(.06)	(.08)	(.08)	(.10)	(.16)
Pseudo R2	.15	.15	.14	.15	.15
N	898	1801	2103	2158	1360

Source: National Survey of Family Growth 1988, 1995.

Notes: Religious attendance and family structure are from adult respondents' reports of their life at age 14. Standard errors in parentheses. The reference group is a White native-born woman whose mother had a high school degree and who grew up outside the South with a single parent and did not go to religious services regularly. Significance levels are the following: ~ p<.10; * p<.05; ** p<.01.

Table 6. Odds Ratios from Logistic Regression Models Predicting Having a Shotgun Wedding (Contingent on Having a Non-marital Conception) by Childhood Family and Demographic Characteristics

	Born 1944-48	Born 1949-53	Born 1954-57	Born 1958-62	Born 1963-67
Weekly Religious Attendance	1.41	1.18	1.37~	1.77**	1.01
	(.47)	(.23)	(.22)	(.27)	(.18)
Two-Parent Family	1.35	1.77**	2.22**	.96	1.23
	(.44)	(.34)	(.38)	(.14)	(.22)
Race					
Black	.13**	.16**	.18**	.20**	.18**
	(.05)	(.03)	(.04)	(.04)	(.05)
Latino	---	.51	.19**	1.33	.91
		(1.62)	(.12)	(2.08)	(.23)
Other	5.96~	.16**	1.78	.52*	1.27
	(5.99)	(.07)	(.65)	(.16)	(.56)
Maternal Education					
Less than High School	1.49	.38**	.91	.62**	.52**
	(.51)	(.08)	(.15)	(.10)	(.11)
Some College	1.19	.74	.56	.56~	1.70
	(.76)	(.29)	(.22)	(.17)	(.52)
College Graduate	3.16	.24**	.62	.25**	2.27**
	(2.59)	(.10)	(.21)	(.11)	(.81)
Immigrant	.62	.16**	.94	.21	1.15
	(.41)	(.10)	(.39)	(.28)	(.39)
Grew up in the South	1.12	1.05	.84	.93	1.16
	(.41)	(.21)	(.15)	(.16)	(.24)
Intercept	1.61	2.85**	.74	.93	.64*
	(.72)	(.70)	(.15)	(.15)	(.12)
Pseudo R2	.18	.21	.15	.10	.10
N	304	702	908	998	714

Source: National Survey of Family Growth 1988, 1995.

Notes: Religious attendance and family structure are from adult respondents' reports of their life at age 14. Standard errors in parentheses. The reference group is a White native-born woman whose mother had a high school degree and who grew up outside the South with a single parent and did not go to religious services regularly. Significance levels are the following: ~ p<.10; * p<.05; ** p<.01.

Figure 1: Childhood Family Structure and Religious Attendance