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How Early Life Religious Exposure Relates to the Timing of First Birth

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Abstract

This paper examines intermediary processes explaining how religious socialization and involvement early in life are related to the timing of first births for women in the United States. The theory of conjunctural action forms the basis for hypotheses for how religious schema and materials operate to influence birth timing. Using the NLSY79 data and event history methods, the study finds evidence for expected family size, work-family gender ideology, educational attainment and enrollment, cohabitation, and age at marriage as mediators of associations between early life religious exposure (affiliation and attendance) and the timing of nonmaritally and maritally conceived first births. These findings corroborate other research identifying the long reach of religious socialization and involvement in youth, elucidate some of the pathways for these connections, and motivate further work to understand linkages between religion and family behaviors in the United States.

Keywords

Religion; Fertility; National Longitudinal Study of Youth (NLSY)

In the last few decades, research on religion's relationship to childbearing has become more sophisticated in its conceptualization of religious factors relating to fertility. Whereas earlier studies restricted their examination of religion to broad denominational differences in family size (Ryder and Westoff, 1971; Whelpton, Campbell, and Patterson, 1966), more recent studies have shown differences across Protestant denominations and considered factors such as the frequency of people's service attendance and the declared importance of religion in people's lives (Hayford and Morgan, 2008; Mosher, Williams, and Johnson, 1992; Zhang, 2008). Their findings suggest that religious traditions may influence adherents' fertility in numerous ways. For instance, belonging to a more pronatalist religious tradition that emphasizes family and parenthood and sanctions contraception or abortion, is associated with having more children (Goldscheider, 1979; McQuillan, 2004), and women who attend religious services more frequently are likely to desire and have more children (McQuillan, 2004; Hayford and Morgan, 2008; Zhang, 2008). However, contemporary studies of religion

and fertility continue to have important limitations in their theoretical bases, outcomes of interest, and measurement of religion and its mechanisms.

In their theoretical models, studies of religion and fertility have been largely motivated by what Goldscheider (1971, p. 293) calls the “superficial” and “inadequate” assumption that it is primarily pronatalist religious values that encourage pronatalist behavior. Goldscheider (1971; 1999) and McQuillan (2004) have called for more encompassing theoretical models attending to the wide variety of values that religious institutions promulgate, and the means through which institutions promote and reinforce these values.

In addition, studies of religion and fertility have focused almost exclusively on completed family size as the outcome of interest. The timing of first birth has been relatively neglected, although it carries significant consequences for women’s socioeconomic attainment and long-term health and well-being, along with the health and well-being of their children (Royer, 2004; Loughran and Zissimopoulos, 2009; Augustine, Prickett, Kendig, and Crosnoe, 2015; Williams, Sassler, Addo, & Frech, 2015). As women who have earlier first births are likely to have more births overall (Rindfuss, Morgan, and Swicegood, 1988; Mills, Rindfuss, McDonald and te Velde, 2011), studying the relationships between religion and the timing of first birth may additionally help us anticipate how macro-level religious change might affect population growth or decline.

Two analytical limitations also characterize earlier studies of religion and fertility. First, they usually rely on measures of religious characteristics that were gathered after women have completed their fertility. As a result, it is unclear whether findings are evidence of religious involvement’s influence on fertility or if having children increases religious affiliation and practice (Stolzenberg, Blair-Loy, and Waite, 1995), though results are often interpreted as the former. To better understand and estimate religion’s effects on fertility, we need more studies that measure religious affiliation and involvement earlier in the life course, before women have begun having children. A second methodological issue with studies of religion and fertility is that they rarely conceptualize or test a comprehensive set of mechanisms for religion’s influence. Existing studies tend to control for as many spurious factors as possible, such as education or income, and then attribute residual religious differences in family size to particularized, pronatalist theologies (Goldscheider, 1971). Rarely have studies incorporated measures of ideology to directly test for mediation, or empirically evaluated other mechanisms for religion’s influence such as educational attainment or enrollment, employment, or union formation.

This paper addresses the above limitations by applying the theory of conjunctural action (Johnson-Hanks, et al., 2011) to situate, integrate, and broaden prior research on why young women’s early life religious exposure might influence the timing of their first births. Prior research shows that 1) women raised in conservative Protestantism are more likely to have a nonmaritally conceived first birth than others; 2) greater religious service attendance early in life lowers women’s risk of nonmaritally conceived birth; but 3) greater religious service attendance hastens the timing of women’s maritally conceived births (Adamczyk and Felson, 2008; Pearce, 2010). We hypothesize that family attitudes and experiences with education, employment, and union formation help explain these findings.

We test our hypotheses with discrete-time hazard models of women's first birth timing using the first twenty-two waves of the National Longitudinal Survey of Youth 1979 (<http://www.bls.gov/nls/nlsy79.htm>). We use a competing risks framework to separately estimate the risk of nonmaritally and maritally conceived first births, as religion and other covariates are theorized to relate differently to each. In sum, we provide a comprehensive conceptualization and empirical analysis of how women's early life religious exposure comes to play a part in the timing of their first births, contributing to a better understanding of the long and complex reach of religious upbringing in the life course.

Background

Theoretical Framework

We draw on the theory of conjunctural action (TCA), a framework for the study of demographic behavior, to delineate the complex ways in which early life religious exposure can affect the timing of women's first births. TCA integrates recent developments in cognitive science, developmental psychology, social psychology, cultural anthropology, and the sociology of culture (Johnson-Hanks, et al., 2011). Following Sewell (1992, 1999), TCA observes that societies are the sites of hundreds, if not thousands, of patterned and overlapping social phenomena, or *structures*, such as language, traditions, or economic systems. Structures are sustained through the repeated instantiations of *schema* (ideas, values, or concepts) in *materials* (external resources such as objects or events). Individuals embody the social structures within which they are embedded during their lives, forming identities out of the schemas they encounter in materials such as family interactions, media, social rituals, laws, etc. They then express those identities through their own behaviors and actions. Because societies contain so many social structures, individuals may internalize numerous and sometimes conflicting options for thinking and behaving, and may have to select from these competing structures during significant life moments, or *conjunctures*.

Importantly, individuals almost never experience the selection of a guiding social structure, or *construal*, as the deliberative consideration or equal weighing of all options. First, some social structures are more powerful for shaping action than others. For instance, social structures encountered during childhood are particularly enduring (Johnson-Hanks, et al., 2011). Schemas that are learned early in life are less likely to be filtered through other (possibly conflicting) schemas, and have more time and opportunity for reinforcement. They are also more likely to be laden with emotional affect during their internalization, enhancing their retention within the brain (Johnson-Hanks et al., 2011). The actions and beliefs generated through such social structures will feel like natural intuitions for years to come. Second, construal is often unconscious and routinized. Though construal is never a fixed process, individuals tend to apply familiar schemas and adopt actions that are consistent with schemas and actions implemented at previous conjunctures (Johnson-Hanks et al., 2011). To the extent that certain social structures become routinely more salient, perceptions and behaviors that align with them will be more prevalent across life domains. So, when a certain social structure dominates in regards to conjunctures that arise in one domain of the transition to adulthood (e.g., education), it is then likely to be more accessible when

conjunctures in relation to other domains of the transition to adulthood (e.g., becoming a parent) present themselves (Johnson-Hanks, et al., 2011).

One important source of schemas, materials and the social structures they comprise is religion (Geertz, 1973). Particularly when experienced during childhood, religion can be a source for durable schemas and patterns of action, that guide future life decisions in ways that might hasten or delay the occurrence of a first birth. Religious institutions also proffer materials, such as rituals or assertions of social control, that instantiate or neutralize certain schema. The extent to which schema available and made salient through early life course religious exposure are used to guide behavior will depend on how various decision points, or conjunctures, are construed. This could depend on the issues at hand, the other available schema, and how relevant a given schema is at the moment (Johnson-Hanks, et al., 2011). For example, religious institutions generally discourage having children too young or before marrying, so if a woman identifies as not yet ready to have children, she may be less influenced by familism schemas in that moment. In sum, TCA helps enrich theory for the associations between religion and fertility by allowing for the conceptualization of (1) a wide range of potentially competing schema that religious (and other) institutions provide from early life on, (2) the materials that reinforce or neutralize them, and (3) the construal processes through which some schema come to matter more or less at different decision points and in different phases of life.

Schemas and Materials Related to Birth Timing

Prior studies of religion and fertility have focused a lot of attention on certain schemas related to childbearing, otherwise known as particularized theologies (Goldscheider, 1971). Most emphasis has been on schemas specific to fertility regulation through contraception and abortion, but Goldscheider (1971; 1999) and McQuillan (2004) call for a more expansive consideration of religious schema or ideology that reference family life more generally, including broader emphases on the importance of families and children and views on the appropriate roles for men and women within families. McQuillan (2004) also emphasizes the need to consider how religious institutions express and reinforce schema, through what TCA refers to as materials.

Virtually all religious institutions venerate the having and raising of children within marriage, a schema we term familism (McQuillan, 2004). Familism is disseminated through explicit rhetoric about children being blessings or signs of religious faithfulness (McQuillan, 2004), and reinforced through the public and emotional celebration of rites such as baby baptisms, dedications, or christenings and the provision of family programs and activities (Wilcox, Chaves, and Franz, 2004). It is further underscored by the prevalence of young children in religious congregations, due to the fact families with young children are especially drawn to religious institutions for moral education and to meet other families with young children (Coombs, 1974; Miller and Pasta, 1995; Stolzenberg, Blair-Loy, and Waite, 1995; Zhang, 2008). Through such materials, religious involvement presents and instantiates to women the schema that having a family with children is a desirable life outcome (Pearce, 2002; Pearce and Thornton, 2007; Hayford and Morgan, 2008).

A second schema common to especially conservative religious institutions is gender complementarity. This is the idea that societies and families benefit from gender specialization, with women taking primary responsibility for domestic duties and men ultimately responsible for economic provision (Tolman, Striepe, and Harmon, 2003; Hamilton, 2014). Women who grow up exposed to conservative Protestant ideas are likely to have repeatedly heard rhetoric and witnessed the extolment of women who focus their energy more on marriage and motherhood (or its pursuit) than a career (Wilcox, 2004; Glass and Jacobs, 2005). Roman Catholic discourse on family issues in the U.S. has been ambiguous and although the church tends to disseminate conservative family schema, lay Catholics favor more liberal schema, so we do not expect women raised as Catholic to have internalized gender complementarity to the degree conservative Protestants would (Wilcox et al., 2004). On the other hand, women raised in Mainline or African American Protestant environments are likely to have been exposed to more progressive rhetoric of the value of all types of families and the promotion of egalitarian ideals (Wilcox et al., 2004). Finally, although women raised without a religious tradition will have no exposure to gender complementarity through religious channels, they are more likely to have parents with lower socioeconomic status which has also been linked to higher acceptance of gender complementarity schema (Schwadel, 2008; Hamilton, 2014).

TCA suggests that schemas of familism and gender complementarity will compete with rival schema guiding young women through their adulthoods, such as the importance of personal achievement and self-sufficiency (Kefalas, et al. 2011). In fact, even these schema can be propagated in religious institutions and instantiated through the public recognition of youth with academic accomplishments and the sharing of social capital (Muller and Ellison, 2001; Smith, 2003; Kim, 2015). Based on TCA, we argue that construal, or working out which schemas best inform the resolution of conjunctures as they arise, will depend on the extent to which certain schema are salient to one's identity and to the content and context of a given conjuncture. Heavily salient schema will not always dominate, but will be more likely to, especially in phases of life where the schema are particularly relevant (e.g., personal achievement before marriage versus familism after marriage). TCA would therefore predict observable empirical patterns in the extent to which women with early life religious exposure hold attitudes related to certain schema, have certain experiences in the transition to adulthood, and hasten or postpone births.

Early Life Religious Exposure and Nonmaritally Conceived First Births

We now focus on identifying some of the possible processes linking early life religious exposure and the risk of a premaritally conceived first birth. Prior research has found, somewhat surprisingly, that young women with a conservative Protestant affiliation and no religious background are more likely to have a nonmaritally conceived first birth than Mainline Protestant, Catholic, or African American Protestant young women, after controlling for a variety of socioeconomic characteristics (Adamczyk and Felson, 2008; Pearce, 2010). This is partly because being raised in a conservative Protestant environment makes one less likely to end a pregnancy through abortion (Adamczyk and Felson, 2008). It may also be because conservative Protestant youth have less access to and are less likely to use contraception when they become sexually active (Brewster et al., 1998). We do not

further evaluate these pathways in this paper, but rather consider the extent to which gender complementarity schema might play a role, especially through the shaping of education and employment.

As outlined above, girls raised in conservative Protestantism or no religious tradition are likely to have been heavily exposed to schemas of gender complementarity. When conjunctures during the transition to adulthood are construed as relevant to the gender complementarity schema, these schema may dominate in guiding behavior. For example, when unmarried women who know they want to have children form educational aspirations, decide at various points to about pursuing more schooling, or make choices about working, they must choose between schema that focus on the importance of becoming a mother and those that focus on the importance of being able to support oneself if necessary. If the former schema begins to outweigh the latter, then a young woman may leave school earlier and be less likely to maintain employment. In fact, conservative Protestant women (especially fundamentalists) have lower educational attainment and employment than women in other religious groups (Sherkat, 2000; Beyerlein, 2004; Lehrer, 2004, 2009; Glass and Jacobs, 2005). Research consistently finds that women with lower education or no employment are more likely to have a nonmaritally conceived first birth, so education and enrollment may be key mechanisms to explain how schema encountered through conservative Protestant religious upbringings or in secular, lower socioeconomic contexts translate into higher risk for a nonmaritally conceived first birth (Rindfuss et al., 1988; Kravdal, 1994; Barber, 2000; Brand and Davis, 2011).

Prior research also shows that more frequent religious service attendance earlier in life lowers the subsequent risk of a premaritally conceived first birth across all attendees regardless of religious affiliation (Pearce, 2010). It may then seem counterintuitive that conservative Protestants are at greater risk for premaritally conceived births, because attendance rates are higher than average among conservative Protestants. However, TCA helps us understand these findings. Controlling for religious affiliation (and the emphasis on gender complementarity this may involve for conservative Protestants), we expect that young women with frequent religious service attendance early in life (regardless of affiliation) will identify more with the schema that encourage self-sufficiency and achievement when they are unmarried. Their decisions about remaining in school and investing in employment or a career will likely rely more on schemas that encourage education and employment, and that discourage behaviors that might lead to a nonmaritally conceived first birth. Nonmarital cohabitation is one such behavior that is discouraged by most religions and does raise the risk of a nonmaritally conceived first birth (Manning, 1995). We therefore predict that education, employment, and the reduced likelihood of cohabitation will be mechanisms for the negative relationship between early life religious service attendance and the risk of a nonmaritally conceived first birth.

Early Life Religious Exposure and Martially Conceived First Births

An earlier study by Pearce (2010) finds no relationships between early life religious affiliation and the timing of maritally conceived first births, but shows that more frequent religious service attendance in early life is related to having an earlier maritally conceived

first birth. TCA may help explain this association between attendance and marital birth timing. Once a young woman begins to accomplish her educational or employment goals, or enters what she, her family, or her religious congregation sees as a marriageable age range, she is more likely to construe conjunctures using familism and gender complementarity schemas than personal achievement schemas. Young women who have internalized familism and gender complementarity schemas are likely to want to have more children on average (Pearce, 2002). This may lead them to marry earlier (Teachman, Polonko, and Leigh, 1987), and begin having children sooner (Rindfuss et al., 1988). For these reasons, we predict that exposure to familism and the higher expected family size that may result, along with an earlier age at marriage, will partly explain how early life religious service attendance is associated with earlier maritally conceived first births.

Summary of Hypotheses

Our theoretical framework outlines how the schema and materials produced and reinforced through religious affiliation and attendance early in life might come to be related to the timing of women's first births. We offer an improvement to simplistic theoretical models that assume religious institutions determine their adherents' behavior by imparting specific values about childbearing or contraception. We posit that religious institutions offer adherents a broad range of schemas related to familism, gender complementarity, and personal achievement that are communicated by materials such as everyday institutional practices as well as discourse. Such materially reinforced schemas are likely to influence members' construal of conjunctures during later transitions to adulthood, specifically those related to education, employment, and union formation. Our specific hypotheses are as follows:

1. The greater likelihood of a nonmaritally conceived first birth for women raised in conservative Protestantism or who have no religious background (compared to Mainline Protestant, Catholic, and African American Protestants) will be partly explained by (a) support for gender complementarity, (b) lower educational attainment, and (c) lower likelihood of current educational enrollment.
2. The inverse association between frequency of early life religious service attendance and the risk of a nonmaritally conceived first birth will be mediated by (a) educational attainment, (b) educational enrollment, and (c) nonmarital cohabitation.
3. The finding that a higher frequency of early life religious service attendance is related to the earlier timing of a maritally conceived first birth will be explained by (a) higher expected family size, (b) support for gender complementarity, and (c) earlier age at marriage.

Method

To test our hypotheses, we analyze data from the first twenty-two waves of the National Longitudinal Survey of Youth 1979 (NLSY79). The NLSY79 features yearly interviews with a national probability sample of 12,686 youth ages 14-22 from 1979 to 1994, and biennial interviews with the same respondents from 1996 until the present. The NLSY79

respondents live in all 50 of the United States, and interviews were almost exclusively conducted in person until 2002 when participants became more dispersed and increasingly expressed preferences for a phone interview. We use the data gathered between 1979 and 2006, because in 2006, the women are between ages 41 and 49, and very few have a first birth after that. In 2006 the study had a within subsample retention rate of 75.7%, and a retention rate of 78.6% among women (NLSY 2011). We focus on the female participants from what the NSLY refers to as the “cross-sectional” subsample of the NLSY79. This is a sample of 6,111 respondents designed to represent the noninstitutionalized civilian segment of people living in the United States in 1979, who were born between January 1, 1957, and December 31, 1964. The other parts of the full NLSY79 sample were oversamples of racial or ethnic minorities, economically disadvantaged individuals, and those serving in the military. Members of the military and economically disadvantaged oversamples were not followed for data collection past 1990. Therefore we include in our analyses women who were a part of the nationally representative sample of the noninstitutionalized civilian population in 1979 as well as those in the black and Hispanic oversamples.

The NLSY79 contains rich prospective data on fertility, marriage, cohabitation, schooling, and work behaviors as well as a handful of items on family attitudes, religious affiliation and religious service attendance asked at multiple points in the panel study. We use the marital and fertility information to construct the dependent variables for analyses. We use the other prospective data and a variety of baseline measures from the 1979 survey about family background as independent variables. The key advantage to using these data to study religion and fertility are the longitudinal nature of the data, which allows us to model fertility timing using measures of early life religious affiliation and religious service attendance. The data also include relevant information on respondents’ family attitudes, schooling and work behaviors, and union formation preceding fertility timing.

Religion Measures

We focus on two indicators of early life religious exposure: the religious affiliation in which a woman was raised and her frequency of religious service attendance in adolescence and young adulthood. The NLSY79 determined respondents’ affiliations by asking the question “In what religion were you raised?” and probing for specific denominations in the event of a general response of “Protestant” or “Christian.” We grouped these responses into seven categories based primarily on the RELTRAD coding scheme described by Steensland et al. (2000): Catholic, Mainline Protestant, Conservative Protestant, African American Protestant, Other Protestant, Other Religion, and No Religion. After creating the categories, we created dummy variables for each, indicating membership.

To measure the frequency of religious service attendance in 1979 (ages 14-22) and 1982 (ages 17-25), the NLSY79 asked respondents, “In the past year, about how often have you attended religious services—more than once a week, about once a week, two or three times a month, about once a month, several times or less during the year, or not at all?” The coding of these responses ranges from 1 = “not at all” to 6 = “more than once a week.” Because the unit of analysis for these analyses is person-year observations, frequency of religious service attendance is a time-varying measure. For those person-year observations that take place

after 1979, but before 1982, we used the measure of religious service attendance from 1979. For those person-year observations that take place after 1982, we used the measure of religious service attendance in 1982. If the respondent was not interviewed in 1982 we used the 1979 measure.

Measures of Family Attitudes, Education, Employment, and Union Status

This study proposes the following mechanisms for the influence of early life religious exposure: family attitudes in the forms of expected family size and work-family gender ideology; educational attainment; age at marriage (for respondents reporting marital births); and whether or not an individual is enrolled in school, employed, or cohabiting. We code expected family size from answers to the following question: “Altogether, how many children do you expect to have?” To measure work-family gender ideology (a measure of support for gender complementarity), we sum six Family Attitudes questions that were asked in 1979, 1982, and 1987 into a scale. For any given year at risk of nonmarital or marital birth, a respondent’s work-family gender ideology was fixed as their score from the most recently administered scale items. All variables except work-family gender ideology and age at first marriage are coded as time-varying and are measured at each interview (the beginning of each person-year period of observation). Thus, for example, it is the effect of whether a person is enrolled in school at time t , total years of education at time t , whether a respondent is employed at time t , whether a respondent is cohabiting at time t , or expected number of children at time t on whether or not a person has a first birth between t and $t + 1$.

Measures of Family Background

Certain family background or sociodemographic characteristics may result in a spurious relationship between religion and fertility, so in these analyses, we include controls for a variety of these factors as measured in 1979. We control for race/ethnicity, mother’s educational level, whether the individual lived with two biological parents at age 14, and total net family income logged (calculated based on reports of either a respondent’s parent or the respondent of numerous kinds of income received by all members of the respondent’s household and logged due to its skewed distribution). As with all observational research, we are unable to control for unobserved confounding variables, and we discuss this limitation in our conclusions.

Analytic Strategy

We employ discrete-time event history models to estimate the associations between early life religious affiliation and frequency of religious service attendance and the timing of subsequent first births, testing whether the inclusion of other variables helps explain any relationships we find. Our unit of analysis is the person-year of exposure to first birth. The data therefore contain multiple observations for each respondent where the number of observations corresponds to the number of years the individual is at risk for a first birth. For each year before the year of the pregnancy that resulted in the first birth, the dependent variable is coded 0 and the year in which the pregnancy leading to the first birth occurred is coded 1. For women who did not experience a first birth before the last NLSY79 survey we utilize (2006), the dependent variable is coded 0 for all person-years. Further, to model the

passage of time, every model includes a set of dummy variables for each wave of the survey, with 1979 serving as the reference year.

We use logistic regression to estimate the discrete-time hazard models (Allison, 1984). Although sample size is increased substantially by using person-years of exposure to risk as the unit of analyses, Petersen (1991) and Allison (1984) show that using discrete-time methods does not deflate the standard errors, and thus provides appropriate tests of statistical significance. In addition, because the probability of becoming pregnant within each one-year interval is relatively small, the estimates obtained via discrete-time methods approximate those that would be obtained through continuous-time methods. Furthermore, discrete-time methods using person-years of exposure are appropriate because the data about first birth timing are precise to the year. Because the data collection began in 1979, the hazard models begin in that year. Women who had a first birth prior to 1979 are excluded from these analyses.

To examine how early life religious exposure relates to the timing of both nonmaritally and maritally conceived first births, we estimate separate hazard models using a competing risks framework. For nonmaritally conceived first births, marriage is the competing risk; therefore, respondents are no longer considered at risk of a nonmaritally conceived first birth once they have married. For maritally conceived first births, a nonmaritally conceived first birth is the competing risk; therefore respondents who conceived a first birth while never married are no longer considered at risk of a maritally conceived first birth. Additionally, only first births that occur before ever marrying or fewer than nine months after marriage are considered to be nonmaritally conceived first births. Only first births that occur at least nine months after marriage are considered maritally conceived first births.

In the analysis of timing of both types of births, we follow a similar progression of models. First we estimate the zero-order relationships between our two measures of early life religious exposure and the timing of first birth. Then, we include family background characteristics to assess the extent to which their correlation with early life religious exposure helps us understand the results. Next we move to our mediation models. First we include the two measures of family attitudes to see the extent to which they explain the religion-fertility nexus. Second, we include four measures of experiences in the transition to adulthood to see which mediate the relationships between religion and first birth timing. In these mediation models, we use Sobel Tests to ascertain whether any apparent mediation is statistically significant. Sobel tests calculate whether the indirect effect of the independent variable on the dependent variable through the mediating variable is statistically significant (Baron & Kenny, 1986). Because we use logistic regression to estimate our models, we run the Sobel tests using standardized coefficients (Winship and Mare, 1983; MacKinnon and Dwyer, 1993).

Table 1 displays descriptive statistics for all time-invariant variables used in our event history analyses. Note that 21% of our sample experienced nonmaritally conceived first births within the time period under study, and 47% experienced maritally conceived first births within the time period. Table 2 displays descriptive statistics for all time-varying

variables used in our event history analysis separated out by dependent variable (nonmaritally vs. maritally conceived first birth).

Results

Risk of Nonmaritally Conceived First Births

Table 3 presents the results of analyses examining how the risk of a nonmaritally conceived first birth relates to the religion in which a respondent was raised and the frequency with which an individual attended religious services.

Model 1 showed significant variation across religious affiliations in the odds of having a nonmaritally conceived first birth, with those raised Catholic, conservative Protestant, or African American Protestant all more likely to have had a nonmaritally conceived first birth than Mainline Protestants. In analyses not presented here, those raised in conservative Protestantism were also significantly more at risk of a nonmaritally conceived first birth than Catholics, and those raised in historically African American Protestant contexts were even more likely than both Catholics and conservative Protestants to have a nonmaritally conceived first birth. Nearly all these differences were a function of family background.

Once we controlled for race/ethnicity and family socioeconomic characteristics (Model 2), the analyses showed that women raised in a conservative Protestant tradition were 53 percent more likely than those raised Mainline Protestant to experience a nonmaritally conceived first birth. Further analyses not displayed here showed that those raised in a conservative Protestant tradition were more likely than respondents raised in any other religion (but not more than those raised in no religion) to experience a nonmaritally conceived first birth. Additionally, although marginally significant ($p < .10$), women who reported more frequent religious service attendance were less likely to experience a nonmaritally conceived first birth (six percent less likely for each level difference in religious service attendance).

Model 3 included two attitudinal measures, expected number of children and work-family gender ideology. Although marginally significant ($p < .10$), expecting to have more children was associated with an increased likelihood of a nonmaritally conceived first birth the following year—a six percent increase in the likelihood for each additional child expected. Also, more egalitarian women were less likely to have a nonmaritally conceived first birth. The Sobel Test results revealed that the association between being conservative Protestant and the risk of a nonmaritally conceived first birth was mediated by both expected number of children ($Z = -1.773$, $p = .07$) and work-family gender ideology ($Z = 2.122$, $p = .03$). These findings provided evidence that endorsing the content of schemas about familism and gender complementarity partly explained how being raised in a conservative Protestant context might come to increase the risk of a nonmaritally conceived first birth.

Model 4 allowed us to examine potential pathways for the early life religious exposure to influence the risk of a nonmaritally conceived first birth, including educational attainment and enrollment, employment, and nonmarital cohabitation. Our results showed that accumulating more years of education and being currently enrolled in school both reduced the likelihood of experiencing a nonmaritally conceived first birth in the following year.

Each additional year of education resulted in a seven percent reduction in the risk of a nonmaritally conceived first birth, and being currently enrolled resulted in a 28 percent decrease in the risk of a nonmaritally conceived birth. Whereas employment had seemingly no effect, cohabiting significantly increased the likelihood of experiencing a nonmaritally conceived first birth the following year. Those who were in a cohabiting relationship had 153 percent higher odds of having a nonmaritally conceived first birth compared to those who were not.

The effects of being raised in a conservative Protestant tradition and religious service attendance were both attenuated by the inclusion of the transition to adulthood measures. Results of Sobel Tests revealed that the effects of both religious measures were mediated through education. The effect of being raised in a conservative Protestant tradition was mediated through accumulated years of education ($Z = 2.672, p < .01$), and religious service attendance was mediated through both accumulated years of education ($Z = -2.733, p < .01$) and being currently enrolled ($Z = 2.161, p = .03$). Further, the effect of religious service attendance was mediated through cohabitation experience ($Z = 5.586, p < .01$). Thus, we found support for our hypothesis that being raised in a conservative Protestant environment raises the risk of a nonmaritally conceived first birth partly because of lower educational attainment. And, we found support for our hypotheses that early life religious involvement in any tradition postpones or prevents nonmaritally conceived first births through educational attainment and enrollment, as well as through the lower likelihood of nonmarital cohabitation.

Model 5 was a full model including the attitude measures and the transition to adulthood experiences in the same model. We kept these sets of variables separate in Models 3 and 4 to show that they were related to the timing of nonmaritally conceived first births and served as mediating factors. However, these two sets of variables are endogenous to each other, so putting them all in the model together complicated their interpretation. For example, work-family gender ideology was no longer a significant predictor in the model once the transition to adulthood measures were included. It is likely that one's attitudes toward the gendered organization of family and work life and desired number of children both shape and are shaped by educational, work, and partnering experiences that unfold in the transition to adulthood. These simultaneous processes have implications for the risk over time of a nonmaritally conceived pregnancy.

Maritally Conceived First Births

Table 4 presents our examination of the relationships between the risk of a maritally conceived first birth and both the religion in which a respondent was raised and the frequency with which an individual attends religious services. As Models 1 and 2 of Table 4 demonstrate, there were no differences in the timing of maritally conceived first births by religion in which women were raised that were not explained by family background characteristics, confirming Pearce's (2010) findings.

More frequent religious service attendance was positively related to women's risk of a maritally conceived first birth across all three models. In the final model, a one-unit greater level of religious service attendance was associated with five percent higher odds of a

marital birth in a given year. This translates into 28 percent higher odds of a marital birth in a given year for those who attended more than once a week than for those who never attended ($1.05^5 = 1.28$). The Sobel test results revealed that there was a significant moderation of the relationship between religious service attendance and risk of maritally conceived first births through both age at marriage ($Z = 2.11, p = .03$) and fertility expectations ($Z = 12.35, p < .01$). Model 3 showed that women who married at younger ages had maritally conceived first births at a faster rate than those who married later. Each year earlier they married, they had a four percent higher rate of a maritally conceived first birth. Those women who were expecting to have more children also had maritally conceived first births at a faster rate than those who expected fewer children. Each additional child expected raised the rate of a maritally conceived first birth by 39 percent. So, the positive relationship between more frequent religious service attendance early in life and the rate of maritally conceived first births seemed to partially operate through the schemas and materials of religion also encouraging marriage and raising fertility intentions.

Discussion

In this paper, we use the theory of conjunctural action to propose a model for how women's early life religious exposure may influence their later childbearing behavior. We argue that women's early life religious exposure may affect the extent to which women internalize schemas of familism and gender complementarity, and competing ideas such as personal achievement and self-sufficiency. We predict that early exposure to schemas inform women's comprehension and decision making processes at significant moments later in life, which carry implications for their fertility. Our analysis confirms our hypotheses that the key mechanisms for religion's influence on the timing of first birth are women's internalized schemas relating to expected family size and work-family gender ideology, and women's educational attainment and enrollment, cohabitation, and age at marriage. In fact, these education and union formation experiences likely serve as materials reinforcing the values of schema that inform a variety of lines of action that result in births.

This larger model, recognizing the role of competing schemas, the role of materials in support or conflict with schemas, and the process through which individuals construe conjunctures, offers a valuable improvement to how prior research has theorized the relationship between religion and fertility. As Goldscheider (1971) and McQuillan (2004) point out, researchers often too simplistically assume that it is only those religious values that explicitly concern fertility or controlling reproduction that shape fertility behavior. TCA provides a framework in which we can consider a broad range of schemas, some directly invoking ideas of fertility and family (e.g., familism and gender complementarity) and some not (personal achievement and self-sufficiency), that religious institutions communicate explicitly and subtly through their rituals, social interactions, sanctions, and other materials (Johnson-Hanks, et al., 2011).

This improved model helps us better understand why we see that women raised in conservative Protestant contexts, where we would expect the proscription against premarital sexual behavior (and thus pregnancy) to be powerful, have a greater risk of a nonmaritally conceived birth than those raised in Catholic or Mainline or African American Protestant

communities. TCA provides a variety of ways of thinking about how this happens. Importantly, young women raised in conservative Protestantism are likely to find gender complementarity, and the idea that they will specialize in managing the home and raising children (even if they do work outside the home), as influential in conjunctures such as whether to continue further in school or whether to carry an nonmaritally conceived pregnancy to term. School may seem less important and having an earlier than expected birth less consequential if her primary goal is having and raising a number of children. Our evidence supports this explanation by showing both that less egalitarian gender attitudes and lower educational attainment and enrollment partially explain the greater risk women raised as conservative Protestants have of nonmaritally conceived pregnancies.

Our improved model also helps us understand the puzzle of why women who attended religious services regularly in early life, even in religious contexts where familism is taught and reinforced, would be at less at risk of a nonmaritally conceived birth. First, there are likely competing schemas at play, such as the idea that one should attain as much education as possible. And, the concept of construal explains that if there are competing schemas, it is likely that the schemas surrounding personal achievement are construed as more relevant in the earlier years of life, especially before marriage occurs. So, schemas that may hasten births are tempered by an understanding of when in life it is most appropriate to be having a child. In sum, we should not expect the exposure to pronatalist values to be related to fertility behavior in all situations.

Finally, the theoretical framework we apply helps us understand how early life religious service attendance comes to be associated with earlier maritally conceived first births. We find support for the possibility that religious schemas and materials supporting familism influence women to desire a greater number of children, which mediates the relationship between religious service attendance and timing of first maritally conceived birth. More frequent attendance is likely to reinforce familism schemas, leading to women's earlier marriage, and earlier maritally conceived first births. Again this is evidence that schemas and materials structure lines of action over time that culminate in patterns in birth timing.

There are of course limitations and areas for future expansion in this work. First, our theory is heavily causal, and we are particularly focused on understanding the influence of early life religious exposure on subsequent birth timing, but our observational methods limit the extent to which we can infer causality in the data. We are fortunate to have such long-term longitudinal data and the ability for many of our predictors to be time-varying and modelled in the correct temporal order with risk of birth. However, some form of unobserved heterogeneity could still be responsible for the results we observe. For example, there could be other factors missing from our models (e.g., parent personality characteristics, access to higher education, etc.) which might explain both early life religious exposure and the timing of first births. Further, we often describe schemas as shaping the behaviors we use as mechanisms and our outcomes, but, in reality, these variables are realistically all more endogenous than we are able to specify in our models. It would be helpful for other studies to focus in on some of these causal pathways and use methods such as instrumental variables or propensity score matching to estimate how much we are overstating the causal processes at work. We do believe that our hypotheses are based on strong theoretical underpinnings

concerning the various causal pathways we discuss, but we need to continue to explore how to better empirically represent and test these ideas.

Second, although TCA provides a useful theoretical framework, there are many aspects of it that we cannot fully operationalize with the data and methods at hand. For example, we cannot observe actual conjunctures or the extent to which various schemas are more or less salient in that moment (or any moment). We must theorize how repeated experiences with schemas and materials relate to how individuals construe and resolve conjunctures, and seek empirical patterns in behavior that match what we predict. Johnson-Hanks, et al., (2011) in fact suggest this strategy for applying their theory. However, to continue to test the framework of TCA, new kinds of methods and data are necessary. For example, ethnographic methods in religious institutions of different types could help to better delineate the schemas and materials they produce and reinforce. Interviews using vignette methods could help to identify the internalization and salience of a range of theorized schemas, as well as illustrate how individuals construe certain conjunctures (Johnson-Hanks, et al., 2011).

Finally, although some of our measures of family attitudes and experiences in the transition to adulthood do operate as mechanisms for the relationships between early life religious exposure and timing of first births in the United States, the impact of religion is not as well explained by commonly theorized mechanisms as many might predict. This is surprising given the heavy emphasis on these factors in the literature. However, the reduction in the coefficients for our early life religious exposure variables is comparable to the reductions in other family background characteristics in the models such as mother's education, family structure, and family income. These other family background characteristics are also expected to be heavily mediated by the same transition to adulthood experiences and attitudes.

Given our general success in explaining the religion and fertility link through the framework of TCA, we recommend future research explore ways to incorporate measures of more schemas and materials, and methods for better operationalizing the process of construal. Recent research showing the spread of fertility behavior among friends suggests that social interaction and modeling within congregations are possible materials for the communication for familism schema (Balba and Barban, 2014). It could also be that studying the likelihood of second and third births, marital and nonmarital, could reveal a larger role of religious schemas and materials in birth timing and fertility completion.

Births are life-altering for parents. Their timing has implications for mothers' and children's achievement, health, and well-being (Royer, 2004; Loughran and Zissimopoulos, 2009; Augustine, Prickett, Kendig, and Crosnoe, 2015; Williams, Sassler, Addo, & Frech, 2015), and their timing affects population growth and decline. This study provides evidence that religious exposure during childhood and adolescence is related to the timing of subsequent births--nonmarital and marital. This relationship is complex, involving a range of schema and materials cohering into social structures that guide fertility behavior, and it is imperative to continue examining how and why religion contributes to the timing of births. Additionally, our larger model of religious influence may apply to researching other

outcomes known to be associated with religion, such as education, wealth, and physical and mental health, greatly improving our larger understanding of how religion matters in social life.

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Table 1

Descriptive Statistics for Time-Invariant Variables in Event History Analysis of Transitions to Nonmaritally and Maritally Conceived First Births: NLSY79 Data from 1979-2006

Variable	Description	M	SD
Nonmaritally conceived first birth	Percentage of respondents experiencing nonmarital birth	.21	---
Maritally conceived first birth	Percentage of respondents experiencing marital birth	.47	---
Raised Catholic	Raised in Catholic tradition	.36	.48
Raised Mainline Protestant	Raised in a Mainline Protestant tradition	.20	.40
Raised conservative Protestant	Raised in a conservative Protestant tradition	.19	.39
Raised African American Protestant	Raised in an African American Protestant tradition	.14	.35
Raised other Protestant	Raised in a Protestant tradition other than those listed above	.03	.20
Raised other religion	Raised in a religion other than those listed above	.03	.18
Raised no religion	Raised in no religious tradition	.03	.17
Race/Ethnicity			
White	Self-identified as non-Hispanic white	.45	.50
Black	Self-identified as non-Hispanic black	.22	.41
Latino	Self-identified as Hispanic	.14	.35
Other	Self-identified as other race	.19	.39
Mother's education	Mother's years of schooling	10.95	3.12
Two bio parents at age 14	Lived with two biological parents at age 14 (0=no; 1=yes)	.69	.46
Total net family income logged	Logged family income at age 14	9.24	1.35
Age at marriage	Age when married	21.63	4.12

Table 2

Descriptive Statistics for Time-Varying Variables in Event History Analysis of Transitions to Nonmaritally and Maritally Conceived First Births: NLSY79 Data from 1979-2006

Variable	Description	Nonmaritally Conceived First Birth Analyses		Maritally Conceived First Birth Analyses	
		M	SD	M	SD
Frequency of religious service attendance	Frequency of religious service attendance from most recent survey, 1979 or 1982 (ranges from 1=not at all, to 6=more than once a week)	3.35	1.67	3.23	1.67
Age	Age in years at t	21.11	4.19	23.15	4.67
Expected number of children	Reported number of children respondent expects at $t-1$	2.22	1.31	1.79	1.36
Work-family gender ideology	Averaged index measuring level of gender egalitarianism in work-family division of responsibilities from most recent survey, 1979, 1982, or 1987 (1 = traditional, 4 = egalitarian)	3.12	.50	3.12	.50
Accumulated years of education	Years of school completed at t	12.38	2.39	12.48	2.27
Currently enrolled in school	Enrolled in school at t (0=no; 1=yes)	.42	.50	.28	.45
Currently employed	Employed at t (0=no; 1=yes)	.75	.43	.78	.42
Currently cohabiting	Cohabiting with romantic partner at t	.06	.24	---	---

Table 3

Logistic Regression Coefficients, Standard Errors, and Odds Ratios from Analysis of Women's Transition to Nonmaritally Conceived First Birth, Treating Marriage as a Competing Risk: NLSY79 Data from 1979-2006

	Model 1	Model 2	Model 3	Model 4	Model 5
Raised Catholic	.28* (.12) <i>1.33</i>	.20 (.13) <i>1.22</i>	.18 (.13) <i>1.20</i>	.18 (.13) <i>1.20</i>	.16 (.13) <i>1.17</i>
Raised conservative Protestant	.42** (.13) <i>1.53</i>	.32* (.14) <i>1.39</i>	.30* (.14) <i>1.35</i>	.29* (.14) <i>1.34</i>	.29* (.14) <i>1.33</i>
Raised African American Protestant	.87*** (.14) <i>2.39</i>	.03 (.17) <i>1.03</i>	.02 (.17) <i>1.02</i>	-.01 (.17) <i>.99</i>	.01 (.17) <i>1.00</i>
Raised other Protestant	.22 (.24) <i>1.24</i>	.10 (.24) <i>1.10</i>	.09 (.24) <i>1.09</i>	.03 (.24) <i>1.03</i>	.03 (.24) <i>1.03</i>
Raised other religion	.19 (.24) <i>1.21</i>	.09 (.24) <i>1.09</i>	.04 (.24) <i>1.04</i>	.10 (.24) <i>1.11</i>	.06 (.24) <i>1.06</i>
Raised no religion	.45 [†] (.26) <i>1.57</i>	.36 (.26) <i>1.43</i>	.32 (.26) <i>1.38</i>	.31 (.26) <i>1.37</i>	.29 (.26) <i>1.34</i>
(Raised Mainline Protestant)					
Frequency of religious service attendance	-.04 (.02) <i>.96</i>	-.04 [†] (.02) <i>.96</i>	-.05* (.02) <i>.95</i>	-.01 (.02) <i>.98</i>	-.02 (.03) <i>.98</i>
Black		.75*** (.14) <i>2.12</i>	.77*** (.14) <i>2.17</i>	.85*** (.14) <i>2.34</i>	.87*** (.14) <i>2.38</i>
Latino		.11 (.14) <i>1.11</i>	.11 (.14) <i>1.12</i>	.16 (.14) <i>1.17</i>	.16 (.14) <i>1.17</i>
Other		.05 (.12) <i>1.05</i>	.06 (.12) <i>1.06</i>	.05 (.12) <i>1.05</i>	.06 (.12) <i>1.06</i>
(White)					
Mother's education		-.06*** (.01) <i>.94</i>	-.06*** (.01) <i>.95</i>	-.05** (.02) <i>.95</i>	-.05** (.02) <i>.95</i>
Two bio parents at age 14		-.36*** (.09) <i>.70</i>	-.37*** (.09) <i>.69</i>	-.31*** (.09) <i>.73</i>	-.32*** (.09) <i>.72</i>
Total net family income logged		-.07* (.03) <i>.94</i>	-.07* (.03) <i>.94</i>	-.05 [†] (.03) <i>.96</i>	-.05 [†] (.03) <i>.96</i>
Expected number of children		.05 [†] (.03) <i>1.06</i>		.07* (.03) <i>1.07</i>	
Work-family gender ideology		-.03* (.01) <i>.97</i>		-.02 (.01) <i>.98</i>	
Accumulated years of education			-.07* (.03) <i>.93</i>	-.07* (.03) <i>.93</i>	
Currently enrolled in school			-.33*** (.11) <i>.72</i>	-.33*** (.11) <i>.72</i>	
Currently employed			.14 (.10) <i>1.14</i>	.14 (.10) <i>1.14</i>	.14 (.10) <i>1.15</i>
Currently cohabiting			.93*** (.14) <i>2.53</i>	.94*** (.14) <i>2.54</i>	
Chi-Square Value	147.15	240.35	249.54	292.05	300.13
Degrees of Freedom	34	40	42	44	46

Notes: N = 3,804 (18,485 person years). All chi-square values are significant at .001. Models also include dummy variables representing each wave of the data represented. Standard errors are in parentheses. Odds ratios are in italics.

(system) (two-tailed test)

$p < .001$

$p < .01$

**

$p < .05$

*

$p < .10$

+

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Table 4

Logistic Regression Coefficients, Standard Errors, and Odds Ratios from Analysis of Women's Transition to Maritally Conceived First Birth, Treating Nonmarital Birth as a Competing Risk: NLSY79 Data from 1979-2006

	Model 1	Model 2	Model 3
Raised Catholic	-.02 (.07) .98	-.03 (.07) .97	-.07 (.07) .94
Raised conservative Protestant	.01 (.08) 1.00	-.03 (.08) .97	.00 (.08) 1.00
Raised African American Protestant	-.38 *** (.09) .68	.00 (.13) 1.00	.07 (.13) 1.08
Raised other Protestant	-.11 (.14) .89	-.11 (.14) .90	-.09 (.14) .92
Raised other religion	-.13 (.15) .88	-.13 (.15) .88	-.33 (.15) .72
Raised no religion	.12 (.15) 1.12	.16 (.15) 1.17	.05 (.16) 1.05
(Raised Mainline Protestant)			
Frequency of religious service attendance	.07 *** (.02) 1.07	.08 *** (.02) 1.08	.04 ** (.02) 1.05
Black		-.47 *** (.11) .63	-.45 *** (.11) .64
Latino		-.17 [†] (.09) .85	-.09 (.09) .92
Other		.03 (.07) 1.03	.08 (.07) 1.08
(White)			
Mother's education		-.01 (.01) .99	-.02 [†] (.01) .98
Two bio parents at age 14		-.02 (.06) .99	-.06 (.06) .94
Total net family income logged		.00 (.02) 1.00	.01 (.02) 1.01
Expected number of children			.33 *** (.02) 1.39
Work-family gender ideology			-.01 (.01) .99
Accumulated years of education			.07 *** (.01) 1.07
Currently enrolled in school			-.93 *** (.08) .40
Currently employed			.17 [*] (.08) 1.18
Age at marriage			-.05 *** (.01) .95
Chi-Square Value	125.32	150.76	654.03
Degrees of Freedom	30	36	42

Notes: N = 3,657 (36,093 person years). All chi-square values are significant at .001. Models also include dummy variables representing each wave of the data represented. Standard errors are in parentheses. Odds ratios are in italics.

[†]
p < .10

^{*}
p < .05,

^{**}
p < .01,

^{***}
p < .001 (two-tailed tests)