Chapter 12
Exploring the Effects of Fertility Change on Religiosity in the Twenty-First Century: A Cross-National Analysis

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Introduction

A wealth of theoretical and empirical literature has focused on contemporary fertility trends in advanced industrial or post-industrial societies, especially with regard to what has been termed the Second Demographic Transition. As the various contributions to this volume make clear, fertility rates in many developed countries have dropped to remarkably low levels. Rates vary significantly across European countries, remaining comparatively high–but still below replacement rate—in Anglo-Saxon and Northern European countries, plunging to "lowest-low" fertility levels–rates of 1.3 or less–in southern European nations, and in Germany and Austria (Kohler et al. 2002; Morgan and Taylor 2006).

Scholars continue to debate the relative impact of cultural factors, as opposed to material factors and increasing female labor force participation, in shaping these population dynamics (Adsera 2014). Many investigators have pointed to the role of significant value shifts, such as the growth of anti-authoritarian and egalitarian values, the increased emphasis on self-actualization, individualism, and expressiveness, and the rise of post-materialist orientations. In industrialized societies, it is increasingly common to postpone marriage and parenthood in favor of educational attainment, career achievement, consumerism, personal fulfillment, and other individualistic and expressive values. Rates of non-marital cohabitation have been on the rise, accompanied by rises in the rates of childlessness and in the percentages of births to unmarried mothers (Lesthaeghe and Neidert 2006; Thornton et al. 1992). The result of these trends appears to be long-term sub-replacement cohort fertility

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in a wide array of societies. Recent evidence indicates that the Second Demographic Transition is well underway throughout much of industrialized East Asia (e.g., Japan, Korea, Taiwan), and that it may also be spreading to other regions as well (e.g., Lesthaeghe and Neidert 2006; Morgan and Taylor 2006).

One important issue concerns the role of religion in these transformations. Although there is considerable debate on this point (Stark and Finke 2000), many observers have called attention to widespread declines in religious practice and belief that typically accompany economic development and prosperity (Bruce 2011; Norris and Inglehart 2011). Analyses have often treated secularization (defined mainly in terms of declines in religious practice) as an antecedent factor, and have assumed (explicitly or implicitly) that secularization has been a contributing factor to other value shifts (e.g., rising social and gender egalitarianism, and individualism) that may be implicated in the turn toward sub-replacement cohort fertility (Lesthaeghe and Surkyn 1988; Surkyn and Lestaeghe 2004). This has also figured prominently in debates about whether the United States—with its comparatively high fertility rates, and its relatively high levels of religiosity—is an exception to the patterns and processes of the Second Demographic Transition (Lesthaeghe and Neidert 2006).

This treatment of secularization as a possible antecedent, or cause, of other value shifts and fertility changes fits well with the broader scholarly literature on religion and fertility, which has often assumed that religious institutions, values, and practices tend to shape fertility (Lehrer 1996, 2004; McQuillan 2004). However, some have suggested that the religion-fertility connection may be bidirectional, i.e., that fertility may also impact levels and patterns of religious involvement. At least three lines of argument have expressed this view. For example, some conservative social commentators have argued that declines in the nuclear family, including reduced levels of fertility, have contributed to secularization in the West (e.g., Eberstadt 2013), as follows: …[Observers] have simply assumed …that the decline in the natural family was a mere consequence of the shrinking of belief …the reverse is also true …[However] the ongoing deterioration of the natural family itself has both accompanied and accelerated the deterioration in the West of Christian belief (p. 22, italics added).

From another vantage point, some scholars have discussed the long-term implications of differential fertility among religious groups for the religious, social, and political futures of various societies, including those in Western Europe and the United States (Kaufmann 2010, 2014; Skirbeckk et al. 2010). Yet another strand of work has centered on individual-level patterns especially, but not exclusively, in the United States (e.g., Uecker et al. 2016). Briefly, researchers in this tradition have argued that it is fertile families that tend to be attracted to religion, especially institutional religion, whereas families (and individuals) without children are more likely to detach (or to remain disengaged from) religious pursuits. The impact of fertility on religion may be amplified for certain types of persons and families (e.g., for new fathers, and for those who bear children at certain normative stages "on the social clock"). To be sure, some scholars have cast doubt on the argument that fertility begets religion (Adsera 2014; Berghammer 2009), but it appears that there is at

least some theoretical and empirical basis for investigating these connections further.

Although theorists and researchers have focused primarily on the *positive* associations between fertility and religion–that is, the link between *higher* fertility and *higher* religiosity–the logic of their arguments also helps us to understand why declines in fertility might undermine levels of religious participation, and why long-term, large-scale reductions in fertility rates at the societal level could affect patterns of religious affiliation, participation, salience, and belief in important ways. Building on these lines of argument–in essence "reverse-engineering" some of the theoretical claims developed in individual-level studies—we examine in this chapter the association between country-level fertility decline and subsequent patterns of individual religiosity.

Theoretical and Empirical Background: Religion and Fertility

A long tradition of scholarship has explored the complex relationships between religion and fertility. Much of this work has centered on shifting fertility differentials among religious groups and traditions, and on associations between religious participation levels and fertility (Frejka and Westoff 2008). A significant body of work in this domain has focused on the United States (Goldscheider and Mosher 1991; Hayford and Morgan 2008; Mosher et al. 1992). Although secularization, i.e., declining levels and salience of religious practice and belief, has been raised as one type of value change that has contributed to the large-scale fertility declines (e.g., Surkyn and Lestaeghe 2004), fewer studies have explored religious variations in fertility in specific European contexts (Adsera 2006a, b; Philipov and Berghammer 2007; Frejka and Westoff 2008). Researchers have also highlighted the role of religious influences on fertility in a range of non-Western contexts, with particular attention to the comparatively high fertility among Muslims in several Asian and African nations (Dharmalingam and Morgan 2004; Morgan et al. 2002; Westoff and Bietch 2015).

For much of the twentieth century, U.S. studies tended to concentrate on Catholic-Protestant fertility differentials (Frejka and Westoff 2008; Westoff and Jones 1979). U.S. Catholic fertility levels began to decline disproportionately after the 1920s. Despite some reversal due to the sharp rise in Catholic fertility during the post-World War II baby boom, Catholic-Protestant differences had nearly disappeared by the end of the 1970s. These patterns have largely been attributed to increases in the access to, and use of, various forms of contraception among most segments of the U.S. population (Westoff and Jones 1979). Contemporary analyses of religion and fertility in the United States have noted comparatively high (though declining) fertility rates among Mormons, conservative, i.e., fundamentalist, evangelical, and charismatic, Protestants, and first-generation Catholics, particularly those from Latina/o backgrounds. Fertility rates are much lower among the non-religious and liberal Protestant groups (Mosher et al. 1992). Wide fertility differentials exist

among Jewish groups, with high rates among Orthodox and (especially) Hasidic Jews and rates that are well below replacement levels among Conservative, Reform, and (especially) secular Jewish elements (Stark 2012).

Research using combined data on all OECD countries has reported comparatively low fertility among religiously unaffiliated and liberal Protestants, declining fertility among Catholics, and comparatively high fertility among conservative Protestants (Adsera 2014). In an important comparative analysis of the role of religious factors in shaping fertility in the U.S. and in Europe, Frejka and Westoff (2008) found that (1) Catholic and Protestant women have higher fertility than their non-religious counterparts, and (2) across the U.S. and all regions of Europe, and among all religious denominations, more devout women, i.e., those who attend services more often and who rate religion as more important, tend to have higher fertility. They concluded that, if Europeans were as religious as Americans one might theoretically expect a modest fertility increase of 15% or less for Europe as a whole, but a more dramatic fertility boost, perhaps 30%, for Western Europe (Adsera 2014; Frejka and Westoff 2008).

In a well-known formulation, McQuillan (2004) assessed the circumstances under which religion might be expected to have the greatest impact on fertility. He argued that religious influences will be most evident when the following occur: (1) religious groups and traditions hold distinctive theological beliefs regarding ideal family size, contraception, and other relevant factors; (2) religious institutions have sufficient cultural and organizational strength to enforce these norms and to impose sanctions on those who deviate; and (3) religion is an important component of the social identities of individuals, thus decreasing the likelihood that they will violate religious norms. Others have expanded on these ideas, calling attention to the ways in which religion may operate differently across temporal and spatial contexts, and underscoring the roles of familial, political, and other factors in moderating the links between religion and fertility (Goldscheider 2006; Kertzer 2006).

Although much of the literature has focused on the influence of religion on fertility behavior, there are sound reasons to believe that fertility can affect religion as well. As we noted earlier in this chapter, several strands of recent theory and research have taken this view. One example is work by conservative social critics, who have asserted that changes in family life–including rising divorce rates and reduced fertility rates–have undermined the strength of religious institutions and values in the contemporary West, and in other societies throughout history (Eberstadt 2013). A second example consists of theory and research by Kaufmann (2010, 2014) and others, arguing that (a) low and declining fertility rates among secular and marginally religious Protestants and Catholics in some European societies, along with (b) the high fertility rates of non-Christian, especially Muslim, immigrants, may dramatically alter the religio-cultural makeup of the United Kingdom and other European societies, leading to major changes in social life and potential spikes in political tension and conflict within these countries.

However, the most relevant body of work investigating the effects of fertility on religion comes from individual-level studies conducted primarily, but not exclusively, in the United States. Although some researchers have dismissed this

argument, a number of studies have reported positive links between the presence and number of children in families and the likelihood of religious affiliation, as well as levels of religious attendance, salience, and belief, among adults (Argue et al. 1999; Myers 1996; Petts 2009; Stolzenberg et al. 1995; also see Uecker et al. 2007). Recent work using longitudinal data sources has clarified these patterns further, revealing that the presence of school-aged children is especially important in shaping increases in religious involvement among parents, even predicting the return of parents who were previously disengaged from institutional religion (Schleifer and Chaves 2014; Uecker et al. 2016).

Why might this be the case? Uecker et al. (2016) have helpfully distinguished among four classes or genres of explanations for these patterns. First, the experience of childbearing and childrearing may enhance the appeal of religious beliefs and practices. This may occur because parents want their children to receive religious training and moral socialization, and to participate in major rituals and life cycle events such as baptism, confirmation, or bar mitzvah (Ingersoll-Dayton et al. 2002; Manning 2013; Petts 2007; Sullivan 2008). Parents may also maintain or increase their religious involvement in an effort to serve as good role models for their children (Sherkat 2006; Uecker et al. 2016).

Second, religious congregations are network-driven institutions (Ellison and George 1994; Olson 1989). On one hand, recruitment into religious communities often occurs through pre-existing social ties; on the other hand, because religious groups bring together persons who share common values, interests, and activities, these communities offer fertile ground for the cultivation and maintenance of new friendships (e.g., Ellison and George 1994). The social dynamics of religious congregations are often more welcoming for traditional nuclear families than for persons from other family backgrounds, or for single individuals, because they provide manifold opportunities for couples to interact with like-minded congregants (Argue et al. 1999; Stolzenberg et al. 1995). Moreover, the programming of many religious communities tends to serve families with young children more than others (Wilcox et al. 2004). Taken together, this suggests that one possible appeal of religious communities for parents is the opportunity to interact and bond with fellow parents. This may help to explain why parents with school-aged children and those who have children during normative childbearing years, i.e., on the "social clock," are more likely than others to remain in, or to join, religious groups (Schleifer and Chaves 2014; Stolzenberg et al. 1995; Uecker et al. 2016).

Third, religious communities can also provide an array of formal and informal supports for parents (Chaves 2004; Edgell 2006). Specifically, studies have shown that many congregations offer babysitting and day care services, parenting classes, discussion groups, and other resources that can assist parents (Becker and Hofmeister 2001; Edgell 2006). In addition, parents can gain from their engagement with coreligionists, who may also be parents and may have considerable insight about childrearing issues, such as discipline, moral training, and education. Thus, parents may receive help from their fellow church members, in the form of shared childcare, advice and information, and other practical resources. Further, parents in religious groups may benefit from these social relationships in other important ways. For

instance, interaction with others who share their values and worldview can strengthen faith commitments and can crystallize shared definitions of parental and familial roles, thereby affording valuable moral support and encouragement (Petts 2007, 2009).

Fourth, there may be broader cultural explanations linking fertility and childbearing with religious involvement. For example, many religious communities promote an ideology of "religious familism," focused on pronuptiality and pronatalism, and committed to the view that the traditional nuclear family is the central unit of the social order (Edgell and Docka 2007; Sandomirsky and Wilson 1990; Wilson and Sherkat 1994). Many parents, especially married parents, may see religious involvement as a key element of having a "good" family life (Edgell 2006; Mahoney 2010). In addition, religious engagement and family formation may be regarded as part of a common script of settled-ness and establishment (Becker and Hofmeister 2001; Wilcox et al. 2012). Childbearing and childrearing may also foster religious involvement among parents by keying expectations about parenting roles (Uecker et al. 2016). Some observers have suggested that these dynamics may be particularly evident among fathers, who may reexamine their priorities, focus their attention on family life, and accord a greater role to religious practices and beliefs (Petts 2007).

These four sets of argument help to explain why some studies often report positive empirical associations between parental status and religious affiliation, practice, and belief. More importantly for present purposes, however, they offer valuable hints concerning how and why decreases in fertility within and across societies could result in diminished religious involvement over time. Specifically, fertility decline may reduce the imperative of religious and moral socialization for children, and may undercut the social relevance of certain religious rituals and life cycle events, e.g., baptism, bar or bat mitzvah. In addition, lowered fertility may limit the centrality of congregational social bonds among parents; religious contexts may become less important as sources of friendship and social solidarity. Further, reductions in the numbers of children in religious communities may well impinge on family programming, which in turn could undermine the attractiveness of religious congregations. Taken together, these dynamics could eventually result in an overall loss of resources such as financial giving and volunteers for religious institutions, which would diminish their social visibility and influence.

The cumulative effect of such forces, animated in significant degree by fertility declines, could well impair the intergenerational transmission of faith, making religious institutions less successful in retaining the next generation of potential members. In terms of broader cultural patterning, it is conceivable that through some or all of these mechanisms fertility declines could undermine the influence of normative facets of religion, including norms that encourage religious affiliation and identity, participation, and doctrinal fidelity. To the extent that these dynamics are underway, they raise the possibility that irreligion will become more common and more widely accepted. In such a climate, religious effects on politics, culture, and institutional life would almost certainly wane, perhaps leading to the kinds of religious "privatism" and "fuzzy fidelity" that secularization theorists have long

anticipated, and that some researchers have observed in parts of the developed West (Bruce 2009; Tschannen 1991; Voas 2009; Voas and Crockett 2005).

Taken together, these lines of theory and research give rise to several hypotheses, which will be tested in this chapter. The first will be tested at the aggregate, i.e., cross-national, level: Country-level fertility decline will be inversely associated with average levels of religious attendance, salience, and belief. The remaining hypotheses will be tested using multi-level models, in which individual- and national-level factors are used to predict individual-level variation in religious involvement. In these analyses, the number of children will be positively associated with organizational religious involvement, i.e., frequency of religious attendance, non-organizational practices, i.e., frequency of prayer, religious salience, and religious belief, i.e., belief in God. In addition, also among individuals, national-level fertility decline will be inversely associated with individual-level organizational and non-organizational religious participation, religious salience, and belief. It is expected that these patterns will persist despite controls for individual-level demographic characteristics, religious tradition, social and family values, and contextual factors such as country-level economic development.

Data and Methods

Multilevel data for the analyses we will undertake in this chapter came from several sources. The country level data came primarily from two databases maintained by the World Bank and the United Nations. In the case when a particular measure was not available for the countries analyzed, the statistical yearbooks were consulted. The individual level data came from the World Values Survey (WVS), which began in 1981 and collected nationally representative samples from over 100 countries. The WVS covers such topics as economic development, religion, gender equality, social capital, and subjective wellbeing. Given the goals and objectives of the present study, the pooled 1981–2014 longitudinal WVS data were utilized. This longitudinal public-use dataset was downloaded from the WVS website at http://www.worldvaluessurvey.org/wvs.jsp.

Our country level analysis included the aggregated average frequency of worship service attendance (coded on a 1–7 scale) and religious salience (coded on a 1–4 scale) as well as the aggregated percentage of religious belief, i.e., belief in God which was dummy-coded with 1 = yes and 0 = no, reported by the WVS respondents from 54 countries. Even though these three religious measures are available for more than 60 countries, we restricted our analysis to 54 countries by omitting several countries that had extremely high total fertility rates in 2000. It should be noted that these three aggregated WVS religious measures served as the dependent variables in our country level analysis. Although the frequency of prayer was included in our individual level analysis (see below), this measure was not included in the country level analysis due to the fact that it was only available for a smaller number of countries. To make sure that there was enough variation in TFR and

country level religiosity, the frequency of prayer was excluded from our country level analysis.

Moreover, to explore the association between country level fertility and religiosity, the country's TFR for 2000 was utilized as a key independent variable. In addition, the gross domestic product per capita (GDP) in US$ in 2000 and the WVS year served as statistical controls. To overcome high skewness and kurtosis, GDP 2000 was log-transformed.

For our individual level analysis, there were four WVS religious measures, serving as our dependent variables. The first dependent variable captured attendance at religious services. Respondents were asked how often they attended religious services. Responses were reverse-coded into 7 categories ranging from 1 = practically never to 7 = more than once a week. Two categories that recorded religious attendance only on specific holidays were combined. The second dependent variable was religious salience. Respondents were asked how important religion was in their life. This variable was also reverse-coded ranging from 1 = not at all important to 4 = very important. The third dependent variable gauged religious belief. Respondents were asked if they believed in God, coded as a dummy variable with 1 = yes and 0 = no. The final dependent variable measured private religiosity, indicated by the frequency of prayer. Respondents were asked how often they prayed. This measure was reversed-coded into a new variable with response categories ranging from 1 = practically never to 8 = several times a day.

The focal independent variable for our individual level analysis was a fertility measure from the WVS that asked respondents how many children they ever had. This measure was recorded as a count variable ranging from 0 = no child to 8 = 8 or more children. We also experimented with a desired fertility variable measured by desired number of children. However, because these two variables were highly correlated with each other, the actual number of children was used.

Individual level statistical controls included (1) gender (dummy-coded with male as the reference), (2) age, (3) marital status (dummy-coded with never married serving as the reference), (4) educational attainment (8 ordinal categories from low to high), (5) employment status (dummy-coded with not working as the reference), (6) household income (10 ordinal categories from low to high), (7) traditional gender ideology as indicated by a survey question that asked respondents if they agreed with the statement "Men should have more right to a job than women" (dummy-coded with non-traditional serving as the reference), (8) importance of family (reverse-coded such that it ranged from 1 = not at all important to 4 = very important), and (9) abortion attitudes (reverse-coded ranging from 1 = always justifiable to 10 = never justifiable). In addition, denominational affiliation was dummy-coded into a series of variables: not affiliated, Orthodox, Buddhist, Muslim, mainline Protestant, conservative Protestant, and other faith traditions with Catholic serving as the reference category; the classification of Protestants follows closely the scheme developed by Steensland et al. (2000). Finally, the WVS year was included as a control variable.

Our statistical analyses began with three country level Ordinary Least Squares (OLS) regression models to linearly regress the aggregated frequency of worship

service attendance and religious salience and the aggregated percentage of religious belief, respectively, on TFR 2000, net of GDP per capita 2000 and year of the WVS for 54 countries. These regression models were designed to estimate and test for the positive associations between fertility levels and varying degrees of religiosity at the country level.

Next we estimated four multi-level regression models, in which four individual level religious variables, namely, worship service attendance, religious salience, religious belief, and prayer were regressed, respectively, on two focal independent variables, namely, individual level fertility, i.e., number of children, and country level fertility, i.e., the TFR in 2011, net of statistical controls. For worship service attendance and prayer, linear regression models were specified and unstandardized regression coefficients were reported. By contrast, for religious salience and belief, ordered and binary logit models were estimated and odds coefficients were reported. In these multilevel models, both the intercept and the slope of the individual level fertility measure were allowed to vary across the countries. In order to control for a wider array of covariates, the number of countries included in the multi-level analysis was reduced to 38 for religious attendance, salience and belief, and to 23 for prayer. At the individual level, the sample sizes varied across the dependent variables: 47,880 for religious attendance and salience, 47,844 for religious belief, and 29,593 for prayer. Multiple imputation techniques were used to estimate and replace missing values. Unless otherwise indicated, the mixed models for multilevel modeling in both SPSS and Stata were used.

Results

Table 12.1 reports the country level OLS regression parameter estimates. The regression results show that the TFR in 2000 is positively and significantly associated with religious attendance, salience, and belief at least at the .05 level. More specifically, for each one-unit increase in the 2000 total fertility rate, the predicted worship service attendance, salience, and belief increase by a factor of .50, .19, and 4.48, respectively, net of the log-transformed GDP per capita in 2000 and year of the WVS. The R squared statistics indicate that TFR, along with the control variables, primarily GDP, accounted for 61, 41, and 21% of variance in the dependent variables, respectively. To visualize the estimated linear regression relationships, Figs. 12.1, 12.2 and 12.3 display scatter plots using the standardized predicted values (y-axis) and TFR 2000 (x-axis) based on the above regression models. As anticipated, a strong linear association pattern is observed for all three dependent variables, namely, religious attendance, salience, and belief.

Table 12.2 presents descriptive statistics for all the variables used in the multilevel regression models. It is observed that on average respondents reportedly attended religious services at least once a year and prayed almost once a week. Additionally, about 55% of respondents reported that religion was important in their lives and nearly 78% said that they believed in God. As far as the focal independent

Table 12.1 OLS regression models to predict country-level religiosity[a]

	Attendance		Salience		Belief	
TFR (2000)	0.500	***	0.193	**	4.477	*
GDP per capita (2000; logged)	−0.176	*	−0.117	*	−1.912	
Year of survey	−0.001		−0.004		−0.178	
Constant	5.854		11.346		447.527	
F	26.199	***	11.503	***	4.358	**
R^2	61.10%		40.80%		20.70%	
n	54		54		54	

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

[a]The following countries are included: Albania, Argentina, Armenia, Australia, Belarus, Bosnia, Brazil, Bulgaria, Canada, Chile, Colombia, Cyprus, Ecuador, Estonia, Finland, Georgia, Germany, Ghana, Hungary, India, Japan, Korea, R., Macedonia, Malaysia, Mexico, Moldova, Netherlands, New Zealand, Nigeria, Norway, Peru, Philippines, Poland, Puerto Rico, Romania, Russia, Rwanda, Serbia, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Tanzania, Trinidad and Tobago, Uganda, Ukraine, United States, Uruguay, Venezuela, Vietnam, and Zimbabwe

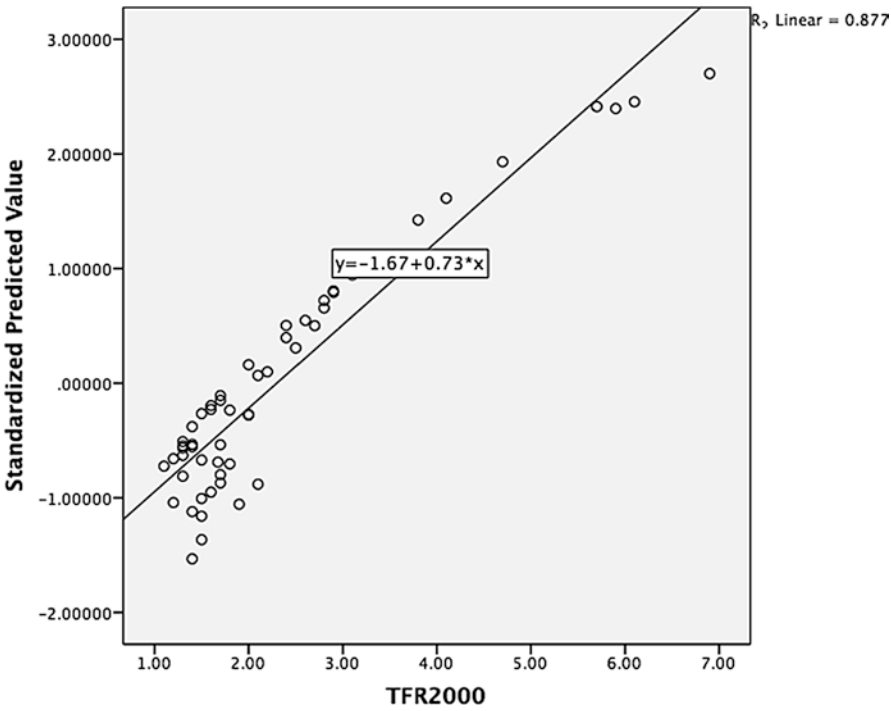

Fig. 12.1 *TFR* (2000) and predicted mean levels of attendance at religious services controlling for GDP per capita (2000) and world values survey year (*n* = 54)

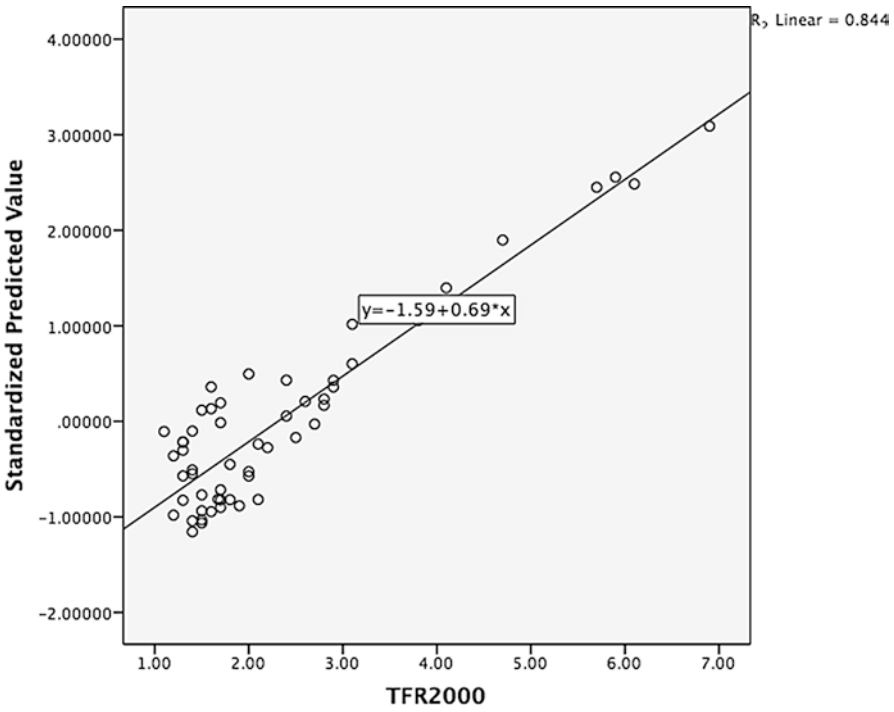

Fig. 12.2 *TFR* (2000) and predicted mean levels of religious salience controlling for GDP per capita (2000) and world values survey year ($n = 54$)

variables are concerned, on average, respondents reported less than two children, and since 1960 the TFR has declined by about 48–49% across the dependent variables.

Turning to Table 12.3, it can be seen that net of statistical controls, both the individual level and country level fertility variables are significantly associated with all individual level religious variables in the anticipated directions. At the individual level, all else being equal, for each additional child respondents reportedly have, their expected frequency of worship service attendance and prayer increase by a factor of 0.059 and 0.080, respectively. In a similar fashion, for each additional child, the expected odds of viewing religion important and believing in God increase by 7.6 ([1.076 – 1] × 100) and 5.8 ([1.058 – 1] × 100) percent, respectively. These regression slopes vary across countries while predicting the individual level religious variables. For the country level fertility variable, each percentage point drop in the TFR since 1960 is associated with decreased frequency of religious attendance and prayer by a factor of 0.015 and 0.025, respectively, holding all the other covariates constant. Likewise, each percentage point drop in the TFR is associated with decreased odds of viewing religion important and believing in God by 1.8 ([0.982 – 1] × 100) and 2.9 ([0.971 – 1] × 100) percent, respectively, all else equal. These results were highly anticipated.

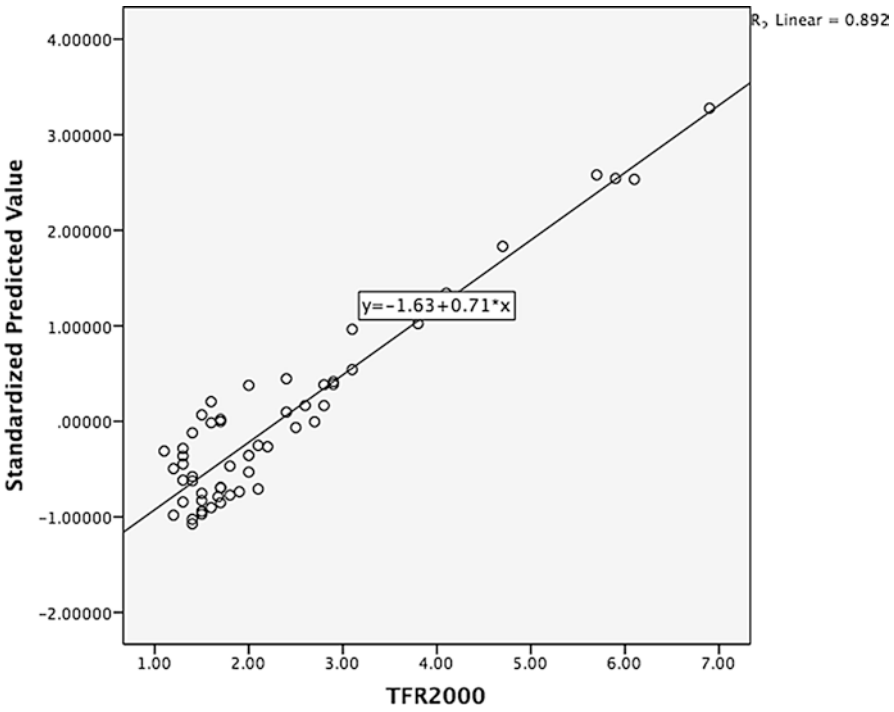

Fig. 12.3 *TFR* (2000) and predicted percentage of belief in god controlling for GDP per capita (2000) and world values survey year ($n = 54$)

Discussion

A long tradition of theory and research has explored the complex relationships between religious factors and fertility. Much of this work has focused on religion's influence on fertility attitudes and behavior, and has investigated variations in fertility, measured usually by the total fertility rate, by religious group or degree of religious commitment (e.g., Adsera 2014; McQuillan 2004; Westoff and Bietch 2015). Although there is much to be learned from this body of research, and ample additional work to be done along those lines, we have taken a different direction in this chapter. We have essentially reversed the causal arrow of this common conceptual model, arguing that fertility declines may lead to eventual reductions in religious participation, salience, and belief. In a sample of 54 countries, we determined that the rate of fertility change, i.e., decline, is clearly and consistently associated with aggregate religiosity. Then we estimated multi-level models combining pooled data from the World Values Surveys with country-level data from various other sources. These models gauged the effects of country-level fertility change on individual-level religious attendance, prayer, salience, and belief in God, controlling for country-level economic development and a host of individual-level covariates.

Table 12.2 Descriptive statistics for the variables in the multilevel models

	n/Mean	%/ SD	n/Mean	%/ SD	n/Mean	%/ SD	n/Mean	%/SD
Dependent variables								
Attendance	3.34	1.93	–	–	–	–	–	–
Salience								
Not at all important	–	–	8949	18.70	–	–	–	–
Not very important	–	–	12,641	26.40	–	–	–	–
Rather important	–	–	12,830	26.80	–	–	–	–
Very important	–	–	13,460	28.10	–	–	–	–
Belief in god								
Yes	–	–	–	–	37,504	78.39	–	–
No	–	–	–	–	10,340	21.61	–	–
Prayer							4.32	2.63
Independent variables								
Denominational affiliation								
No religious affiliation	12,734	26.60	12,734	26.60	12,419	25.96	8914	30.12
Orthodox	12,691	26.51	12,691	26.51	11,161	23.33	7029	23.75
Buddhist	2202	4.60	2202	4.60	2105	4.40	1949	6.59
Muslim	1891	3.95	1891	3.95	1881	3.93	1100	3.72
Mainline protestant	4626	9.66	4626	9.66	5980	12.50	3054	10.32
Conservative protestant	3446	7.20	3446	7.20	2325	4.86	1919	6.48
Other faith tradition	3198	6.68	3198	6.68	2592	5.42	2041	6.90
Catholic (reference)	7092	14.80	7092	14.80	9381	19.60	3587	12.12
Number of children	1.66	1.45	1.66	1.45	1.66	1.47	1.60	1.38
Changes in TFR (1960-most recent year)	−49.54	15.68	−49.54	15.68	−49.30	15.65	−47.93	16.71
Control variables								
GDP (2011; logged)	9.72	1.104	9.72	1.104	9.74	1.09	10.01	0.86
Gender								
Female	25,709	53.69	25,709	53.69	25,692	53.70	16,108	54.43
Male (reference)	22,171	46.31	22,171	46.31	22,152	46.30	13,485	45.57
Age	46.38	17.31	46.38	17.31	45.73	17.29	47.63	17.50
Marital status								
Ever married	37,865	79.08	37,865	79.08	37,725	78.85	23,419	79.14

(continued)

Table 12.2 (continued)

	n/Mean	%/SD	n/Mean	%/SD	n/Mean	%/SD	n/Mean	%/SD
Never married (reference)	10,015	20.92	10,015	20.92	10,119	21.15	6174	20.86
Education	5.08	2.19	5.08	2.19	5.02	2.17	5.26	2.15
Employment status								
Working	25,854	54.00	25,854	54.00	26,017	54.38	16,500	55.76
Not working (reference)	22,026	46.00	22,026	46.00	21,827	45.62	13,093	44.24
Household income	4.68	2.13	4.68	2.13	4.57	2.22	4.71	2.03
Gender ideology								
Traditional	12,000	25.06	12,000	25.06	13,294	27.79	6919	23.38
Nontraditional (reference)	35,880	74.94	35,880	74.94	34,550	72.21	22,674	76.62
Importance of family	3.89	0.37	3.89	0.37	3.89	0.37	3.89	0.38
Antiabortion attitude	6.70	2.97	6.70	2.97	6.68	2.97	6.53	2.99
Year of survey	2009	3.46	2009	3.46	2007	6.59	2011	0.70

SD standard deviation

Consistent with our central hypotheses, number of children is positively associated with each indicator of individual religiosity, whereas country-level fertility decline is inversely associated with each aspect of religiosity. Importantly, these observed effects of country-level fertility on individual religiosity withstand statistical controls for country-level factors such as economic development, e.g., GDP per capita, individual-level demographic characteristics, and ideological variables, e.g., family-centered values, gender egalitarianism, that were measured at the individual level. It appears that country-level factors other than economic development and growing existential security may affect religious patterns (Norris and Inglehart 2011).

Drawing on multiple literatures, especially individual-level research on the fertility-religion connection, we have identified several reasons why residing in contexts of declining fertility may impact religious practice and belief. Specifically, over time, it is plausible that diminished fertility can: (a) limit the significance of religious groups and traditions as socialization mechanisms for children; (b) reduce or eliminate the appeal of religious rituals and life cycle events; (c) undermine the role of religious communities as sources of social ties for parents; (d) undercut the importance of religious congregations as sources of formal and informal social support in childrearing; and, consequently, (e) decrease the programming and resources of many religious communities, thereby limiting their visibility and potency within the public sphere. Overall, these dynamics may erode social norms that encourage and reward religious involvement, culminating in cultural shifts that foster religious privatism and "fuzzy fidelity" (Voas 2009), ultimately legitimizing irreligion. Taken

Table 12.3 Multi-level regression models to predict individual-level religiosity

	Attendance[a]		Salience[b]		Belief[b]		Prayer[a]	
Individual level variables								
Female	0.320	***	1.487	***	2.061	***	0.742	***
Age	0.003	***	1.008	***	1.000		0.011	***
Ever married	−0.005		0.949	*	0.993		−0.039	
Education	0.030	***	0.993		0.952	***	0.019	**
Working	−0.048	**	0.890	***	0.994		−0.091	***
Household income	0.010	**	0.983	***	1.006		−0.021	***
Tradition gender ideology	−0.002		1.067	***	1.136	***	0.095	***
Importance of family	0.131	***	1.501	***	1.303	***	0.182	***
Antiabortion attitude	0.099	***	1.150	***	1.116	***	0.127	***
No religious affiliation	−1.787	***	0.174	***	0.062	***	−2.403	***
Orthodox	−0.183	***	0.900	**	1.064		−0.169	***
Buddhist	−0.592	***	0.742	***	0.190	***	−0.583	***
Muslim	−0.086		1.846	***	1.678	***	−0.216	**
Mainline protestant	0.141	***	1.147	***	0.511	***	−0.066	
Conservative protestant	0.377	***	1.332	***	0.957		−0.119	
Other faith tradition	−0.152	***	1.097	*	0.477	***	−0.264	***
Year of survey	−0.026		0.975		1.001		−0.085	
Number of children	0.059	***	1.076	***	1.058	*	0.080	***
Country level variables								
Changes in TFR (1960-most recent year)	−0.015	**	0.982	*	0.971	*	−0.025	**
GDP (2011 and log-transformed)	−0.038		0.865		1.106		−0.142	
Number of respondents	47,880		47,880		47,844		29,593	
Number of countries	38		38		38		23	

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

[a]Linear model coefficients

[b]Odds coefficients

together, some or all of these processes may help to explain the impact of declining fertility on reductions in individual-level religious participation, salience, and belief that we observed in the above tests.

It is important to acknowledge several features of the data used in this study that may limit the scope and definitiveness of this work. Despite the unique strengths of the World Values Survey project, it is based on a replicated cross-sectional design, and thus is not a panel dataset, precluding a formal analysis of religious change at the individual level. Further, although the project has involved surveys of numerous countries beginning in 1981, some countries were only included beginning in the 1990s. Countries were not surveyed in the same years, and some countries were only surveyed in a small number of years. Most surveys contain only a handful of religion items, and some questions about religion were only asked in a small number

of survey years for each country. Moreover, the available data do not permit us to examine directly the specific mechanisms, about which we have speculated above, that may link fertility decline with religious retrenchment. Thus, although we believe these theoretical arguments are highly plausible, given these data limitations it is appropriate to be tentative in drawing conclusions about the effects of fertility decline on religion.

Despite these constraints, the analyses reported in this chapter make several contributions to existing literatures. First, as noted, we provide at least tentative evidence that the connections between religion and fertility may be bidirectional. Although most prior work has emphasized the influence of religion and religious group differences on fertility patterns, it may be worthwhile to consider effects of large-scale fertility changes on religion. Second, over the past 15 years or so social scientists have "discovered" the value of demographic concepts and methods for the study of religion (e.g., Hout et al. 2001; Schwadel 2011; Sherkat 2014; Voas 2007). The present research augments this literature, contributing specifically to a modest body of work on demographic versions of the secularization thesis (e.g., Voas 2003, 2007). Third, our findings resonate with the claims of some western social historians and cultural commentators (e.g., Eberstadt 2013) who have argued that the decline of the primacy and integrity of the nuclear family including reductions in fertility rates has undermined the role of religious institutions, practices, and values in the contemporary West. Their significant limits notwithstanding, the empirical data presented in this chapter could be interpreted as lending at least tentative support to such claims.

What might our findings imply about the future of religion in many regions of the world during the coming decades, given projected further declines in fertility and related transformations in family structures, living arrangements, and the like? Viewed from one perspective, the continued reductions in fertility may well result in additional declines in religious participation, salience, and belief, and may further erode the visibility and impact of religion in these societies. Further, more signs of secularization may be seen, and the processes outlined here could be expected to gain traction across a wider array of societies, as the demographic transition to very low fertility continues and spreads (Kohler et al. 2002; Morgan and Taylor 2006). These effects of fertility decline could well be amplified by other contextual factors.

Although this is certainly a plausible prediction based on the findings reported here, alternative scenarios are possible as well. For example, in a number of countries with low and very low fertility, Kaufmann (2010, 2014) and others have noted that more secular and liberal religious elements tend to have particularly low fertility rates, far below replacement level. On the other hand, the most religious and conservative elements tend to have much higher fertility. The most conservative religious communities are also often characterized by comparatively low exogamy rates and relatively high rates of member retention. A number of these countries are also impacted by immigration of groups characterized by both high religiosity and above-average fertility; the continuation of these patterns could well boost aggregate levels of religiosity with respect to practice, salience, and belief, even if

religiosity wanes sharply for certain subgroups of the population. Thus, in such countries secularization may be demographically self-limiting.

This raises the possibility that demographic processes may give rise to a complex and variegated set of religious trajectories within and across countries that have low or very low overall fertility at present, or will come to exhibit such patterns in the near future. In this case, these population dynamics would alter the religious composition of many such countries, making the connection between aggregate fertility decline and religiosity more difficult to predict. The effects on levels of *overall* religiosity, i.e., country-level patterns, would depend upon a number of context-specific variables, such as the initial religious composition, differential fertility across specific religious communities, migratory patterns, complex connections between religion and other social institutions, and many others.

Clearly there is a great deal of work needed to further our understanding of the links between fertility decline and religiosity and religious change. The advent of more and better longitudinal (panel) data sources, merged with country-level data on fertility and other relevant factors, will be essential to establish causal effects more clearly, and to adjudicate among the various pathways and mechanisms that have been put forth here. Nevertheless, we believe our work in this chapter casts fresh light on several specific facets of the fertility-religion connection, and it is hoped that future investigations will continue to advance our understanding of the interplay between fertility transformations and religious patterns and changes.

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