The Association Between Belief in God and Fertility Desires in Slovenia and the Czech Republic

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CONTEXT: *Research on the association between religiosity and fertility—and, particularly, on the effects of secularization on fertility desires and outcomes—has been concerned primarily with mechanisms that are fundamentally institutional and are embedded in formal religious structures. Supplementary explanations focused on noninstitutional dimensions of religiosity have never been tested.*

METHODS: *Conventional ordinary least-squares regression was used to test the association between belief in God (i.e., a personal God or some sort of life force) and fertility desires among 2,251 women aged 18–45 in Slovenia and 951 women aged 15–44 in the Czech Republic who participated in the European Family and Fertility Survey in the mid-1990s.*

RESULTS: *In both samples, substantial proportions of women either were nonbelievers or believed in God but were not institutionally religious. Belief in God was independently associated with fertility desires even in analyses controlling for self-reported religiosity. Women who believed in a personal God wanted approximately 0.2 more children, and those who believed in a life force wanted approximately 0.1 more children, than nonbelievers. Results were similar across several alternative measures of religiosity.*

CONCLUSIONS: *At least some of the connection between religiosity and fertility apparently is attributable to metaphysical beliefs. Future research on the effect of secularization on fertility decline should investigate the potentially distinct effects of different dimensions of religiosity.*

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The association between religiosity and fertility has been extensively investigated, and the virtually unanimous finding is that in the United States,[1] in Spain[2] and in Europe generally,[3,4] women who identify themselves as religious have higher fertility intentions and bear more children than others. Prior literature in this area has been largely empirical, providing little in the way of theorizing as to why these relationships exist.[5] Rather, researchers have generally referred to a nexus of pronatalist beliefs and norms, citing, for example, "traditional religious teachings [that] advocate life in a sound traditional family with many children,"[4(p.272)] "the [strong] association between religion and conservative family values,"[1(p.1180)] and "the high value the Church places on family."[2(p.207)] The assumptions embedded in these generalizations are perhaps one reason why most empirical analyses of the religiosity-fertility connection have focused on religions that have explicitly pronatalist doctrines.[5]

However, there has been some theorizing about the mechanisms underlying this relationship. Goldscheider hypothesizes that religion influences fertility through two central mechanisms: social characteristics of the religious group and particularistic theology.[6] The earliest literature emphasized the particularistic explanation. For example, connections between specific theological principles and fertility attitudes and outcomes have been drawn in the case of Catholics,[7,8] Mormons[9] and indigenous African tribes.[10]

McQuillan argues that the emphasis on theological particulars is too narrow, and that the influence of religion on fertility should be analyzed more holistically, taking into account the social, cultural and psychological dimensions of a denomination; this perspective treats religion not just as a set of regulations, but as a sociocultural grouping with a host of informal yet specific norms and values.[11] While these norms and values may interact with the theology, they are conceptually distinct and may influence fertility even in the absence of codified pronatalist theological injunctions. More specifically, McQuillan posits that a religious organization influences fertility once three conditions are met: The religion has specific fertility-related norms, has the ability to promote these norms among its followers and forms a core social identity for its followers.[11] McQuillan still ascribes differential fertility to denomination-specific characteristics, just to nontheological ones.

Generalizing the effect even more, Hayford and Morgan argue that the culture of religion in the United States in general is associated with a broad, family-centered sociocultural outlook.[1] They posit that this outlook, more than specific doctrines or denomination-specific culture, is responsible for the religiosity-fertility connection.

However, there may be more to the story. While religion in general does tend to emphasize pronatalist, family-centered lifestyles and behaviors, this characteristic should not be assumed to tell the whole story simply because it

presents a prima facie plausible explanation. Indeed, prior literature may "oversimplify how conservative religious traditions might affect family life."[12(p.179)] Additionally, prior literature has focused exclusively on formal, institutional variations of religion, whose communities and shared practices might help to disseminate and reinforce family-centric frameworks and, more specifically, pronatalist norms. More individuated, less-structured religious beliefs, however, have received little or no attention as correlates of fertility.

Examining the association between metaphysical beliefs, and not just institutional religious involvement, and fertility norms helps tease out whether some of the connection is attributable to more psychological, personal variables. Specifically, the hypothesis tested here is that a metaphysical belief correlated with religion—a belief in God—is independently associated with pronatalist attitudes.

THE CURRENT STUDY

This study sits at the intersection of psychology of religion and demography, two fields whose methods and approaches vary significantly from each other. There is a large literature on the effects of belief in God on mental health, optimism and recovery from illness. However, the metaphysical worldview differences connecting belief to these outcomes are inherently vague and difficult to operationalize; consequently, this is also a very empirical literature, with little theorizing about the cognitive mechanisms underlying the relationships. By contrast, demography as a discipline generally relies on more easily quantifiable indicators to measure demographic behaviors and trends. This is perhaps why the literature on the religiosity-fertility question has remained stalled on a vague notion of family-centric religiosity: It is difficult to go any deeper with the indicators that demographers are comfortable with. Despite the differences between these two fields, moving forward on the fertility and religiosity question requires drawing from both, even if the psychological mechanisms are socially influenced.

Very few surveys have the relevant demographic and psychological instruments for such an investigation, and none have detailed information on relevant cognitive variables, religious variables and fertility intentions; therefore, causal particulars are difficult to investigate and will not be directly tested here. However, the bourgeoning literature on cognitive tendencies associated with belief in God or other supernatural agents provides a number of plausible candidate mechanisms. For example, anthropomorphism (assigning human characteristics to inanimate objects or ideas),[13] teleological framing (imputing purpose to objects and occurrences)[14] and mentalizing (thinking about and inferring others' mental states)[15] have been suggested as having some causal association with belief in supernatural agents, although the strength of their associations has varied in empirical analyses.[16]

An individual with a believing disposition may be more inclined than a nonbeliever to impute personhood to the idea of a child before one is born or even conceived (i.e., to anthropomorphize); a mentalizing tendency may contribute to this by causing the believer to dwell at greater length on the potential personality of the child. Therefore, the potential child may seem concrete to a believer, rather than being a purely abstract idea.

Similarly, the same teleological bias that may cause believers to attribute a higher purpose to some daily occurrence (say, a missed bus or the death of a pet) may also cause them to ascribe some higher meaning to the idea of another child. By contrast, nonbelievers might attribute the daily occurrence to chance and might take a more personal cost-benefit approach to reproductive decisions.

Finally, potentially higher optimism among believers about their ability to provide for children or the type of world their children would come into may be another mechanism connecting metaphysical beliefs with fertility intentions.

While these are some possible cognitive mechanisms, they are ultimately untestable, given data limitations, and this article does not presume to present a specific causal narrative. The current empirical analysis is limited to demonstrating that the institutional explanations previously used to explain the connection between religiosity and fertility desires are only part of the story, and that a more individualized dimension, based on metaphysical belief, also independently explains some of the variation.

These relationships are not of a simply theoretical or esoteric interest. The role of secularization in the broader fertility transition has been recognized and investigated for decades.[17] However, religion is not a monolithic institution, and secularization is not a monolithic phenomenon. Variations in some forms of expression of religious belief, such as churchgoing, may give way to more individualized forms of spiritual expression, rather than to complete secularism.[18] Therefore, a comprehensive treatment of the religiosity-fertility interrelation needs to not only account for the level of religiosity, but also specify which dimension is being considered and whether that particular dimension is independently associated with fertility ideals and intentions. In so doing, it can help assess whether particular dimensions of secularization—for example, changes in beliefs about supernatural agents even after the majority of the population have become "unchurched"—influence fertility intentions and attitudes.

The prior literature has focused almost exclusively on western European or American countries that have longstanding religious communities. This article examines data from the Czech Republic and Slovenia, two historically Catholic, formerly communist countries whose formal religious institutions and religious social structures were decimated, leaving long-lasting effects on the religious landscape that see no signs of reversing.[19] Both countries are now among the most secular in the world, and according to some surveys, the proportion of the population who are atheists is higher in the Czech Republic than in any other country worldwide.[19] In both of these countries, belief in some sort of spirit or life force is more common

than belief in a personal God.[20] Similarly, a significant proportion of both the Czech[21] and the Slovenian[20] populations claim noninstitutional, individualized metaphysical beliefs, and both experienced a limited upswing in subjective, individual religiosity in the wake of the dissolution of the USSR.[19] These trends allow for the testing of relationships among non–religiously affiliated or nonbelieving subpopulations that in other national contexts are too small to yield any meaningful conclusions. (For example, the 2012 U.S. General Social Survey sample included 20 women who identified themselves as atheists.[22])

METHODS

Study Design

This study draws on data from the European Family and Fertility Survey, a collaborative effort of 23 European countries in the 1990s that attempted to measure underlying rationales for fertility intentions and outcomes. In-person interviews were conducted among nationally representative samples of women and men. In addition to a required core of questions, an optional module included questions on belief in God and various measures of religiosity. Of the participating countries, only Slovenia and the Czech Republic contained the whole set of religiosity and belief variables needed to test the hypothesis of this study; however, these countries have large samples, are uniquely appropriate for the hypothesis tested here and serve to independently confirm each other's results. In Slovenia, 2,251 women aged 18–45 were interviewed (172 in 1994 and 2,079 in 1995); in the Czech Republic, 951 women aged 15–44 participated (all in 1997).

Measures

•*Fertility desire.* The survey contained an indicator of fertility desire, which varied depending on the woman's current fertility status. Women who had never given birth were asked "How many children of your own do you want in all?" Women who already had children were asked "How many more children do you want in all?" Pregnant women were asked "In addition to the child you are now expecting, how many more children do you want to have?" The survey allowed for a range to be given if the respondent desired. Following the process undertaken by Hayford and Morgan, the number of additional children women desired was added to the number they already had to derive a measure of total desired fertility;[1] if women replied to the question on fertility desire with a range, the average of the two numbers was used.

•*Religiosity.* Because of the conceptual overlap between belief variables and religiosity, to be compelling, an argument based on differences between the two needs to demonstrate robustness to alternative measures. Thus, three measures of self-rated religiosity were used: One asked how religious respondents considered themselves (1=not religious, 2=somewhat religious, 3=religious), one asked how important a role religion played in their life (1=very important role, 2=important role, 3=not important role, 4=no role at all and) and one assessed frequency of church attendance (1=more than once a week, 2=once a week, 3=about once a month, 4=at official holidays, 5=once a year, 6=practically never).*

The three indicators were alternated among the models, and all sets of results are reported. For the three-level religiousness measure, the responses "religious" and "somewhat religious" were used as dummy variables, and "not religious" was the reference category. The other two measures were employed as standard ordinal covariates; the original coding for these was counterintuitive (i.e., the higher level of religiosity received the lower score), so the measures were inverted.

•*Belief in God.* The primary independent variable assessing belief in God was derived from a question asking respondents which of the following statements "comes closest" to their beliefs: "There is a personal God," "There is some sort of a spirit or life force," "I don't really know what to think" or "I don't really think that there is any sort of spirit, God, or life force." A dummy variable was created for each of these categories. For the multivariate analysis, the last two categories (representing, respectively, agnostic and atheistic responses) were combined to form the category "no belief," which was the reference group. This was done because the theoretical differences between these categories are obscure and might have as much to do with individuals' personal philosophy of epistemology as with their religious belief per se; furthermore, their coefficients did not show significant differences when they were used separately in a model with believers as the reference group.

•*Background characteristics.* Respondents' age, education, marital status and number of children at survey date were used as controls in each model. Education was measured using the International Standard Classification of Education, a scale that provides a standardized measure of educational attainment across varying national educational systems and contexts. The scale ranges from 0 (less than primary) to 6 (postgraduate); the precise level of schooling signified by intermediate values varies from country to country.[23]

Analysis

Basic descriptive characteristics of the samples were calculated, and then, as an initial check for multicollinearity between institutional religiosity and metaphysical belief, cross-tabulations between the religiosity measures and belief in God were performed. The latter calculations demonstrated that while the two concepts are related, they do not completely overlap, and there are significant numbers

*While many sociological treatments of religion use religious service attendance as a measure of religious devotion, this measure is potentially endogenous with number of children. Consequently, studies on the religiosity-fertility connection tend to use self-rated religiosity.[1] However, Berghammer shows the relationship between church attendance and child number to be exogenous, at least in the Dutch case. (*Source:* Berghammer C, Church attendance and childbearing: evidence from a Dutch panel study, 1987–2005, *Population Studies*, 2012, 66(2):197–212.)

of nonbelieving religionists and nonreligious believers in God. More formally, the variance inflation factors for each of the multivariate regression models were examined; no variable had an independent variance inflation factor above 2.31, and the average for the models ranged from 1.17 to 1.77. These findings confirm that multicollinearity does not appear to be a significant problem, and both religiosity and belief in God can be responsibly included in the same model.

Prior literature has taken a variety of modeling approaches to assessing correlates of completed and intended fertility: standard ordinary least-squares,[1,2] ordered logit,[4] logit[3] and comparison of raw total fertility rates.[24] For the sake of simplicity and interpretability, results of standard multivariate ordinary least-squares regression are presented here, although the results were not substantively affected when the alternative procedures were used. As an optional module, the question about belief in God was asked only of a subsample of the original sample. To maintain sample consistency across models, only respondents who were asked this question and had nonmissing values for the baseline characteristics were included in the analyses. The first regression model measures the association between belief in God and fertility desire, to provide a baseline. Models 2, 4 and 6 each measure the association between one of the religiosity measures and fertility desire without controlling for belief. Models 3, 5 and 7 include both the belief and the religiosity variables.

RESULTS

Descriptive

The average age of women in both samples was about 30; some 89% of Czech respondents and 65% of Slovenians were married (Table 1). On the education scale, women in the Czech sample scored, on average, 2.3 (corresponding to the first stage of secondary schooling), and women in the Slovenian sample scored 3.3 (second stage of secondary education). Women in both samples desired an average of about two children; those in the Czech Republic already had 1.7, and those in Slovenia had 1.4.

In the Czech Republic, three-quarters of women considered themselves nonreligious; the rest were evenly divided between religious and somewhat religious. In Slovenia, 52% were religious, 26% somewhat religious and 22% nonreligious. Results of simple cross-tabulations between belief in God and self-rated religiousness for both countries demonstrate that belief in God is not a subtle proxy for generic religiosity (Table 2). Specifically, 29% of the Czech nonreligious and 42% of the Slovenian nonreligious believed in some sort of higher power (although very few believed in a personal God); 20% of the Czech and 40% of the Slovenian somewhat religious took an agnostic or atheistic position toward the existence of God.

TABLE 1. Selected characteristics of women of reproductive age participating in the European Family and Fertility Survey, Czech Republic, 1997, and Slovenia, 1994–1995

Characteristic	Czech Republic (N=951)	Slovenia (N=2,251)
Age	32.3 (6.9)	30.6 (8.0)
% married	89 (31)	65 (48)
Education (range, 0–6)	2.3 (1.3)	3.3 (1.2)
No. of children desired (range, 0–9)	2.1 (0.7)	2.3 (0.9)
No. of children already born (range, 0–8)	1.7 (0.9)	1.4 (1.0)

Notes: Czech women were aged 15–44; those in Slovenia, 18–45. Unless otherwise noted, data are means; figures in parentheses are standard deviations. Education is measured on a scale of 0 (less than primary)–6 (postgraduate).

TABLE 2. Percentage distribution of respondents, by belief in God, according to self-reported religiousness

Belief	Total	Religious	Somewhat religious	Not religious
Czech Republic	(N= 937)	(N=107)	(N=118)	(N=712)
Personal God	12	54	21	4
Life force	30	34	59	25
Agnostic	25	11	14	29
Atheist	33	1	6	43
Slovenia	(N=2,215)	(N=1,162)	(N=575)	(N=478)
Personal God	24	40	10	4
Life force	43	41	50	38
Agnostic	22	15	30	28
Atheist	11	3	10	31
Total	100	100	100	100

Note: Percentages may not total 100 because of rounding.

The two other measures of religiosity support this finding (results available upon request). Specifically, 23% of Czechs and 38% of Slovenians who reported the lowest value for the importance of religion in their life indicated a belief in a higher power, as did 29% of Czechs and 49% of Slovenians who said that they practically never attended religious services. On the other hand, 14% of Czechs and 21% of Slovenians who indicated that religion was important in their life held agnostic or atheistic views, as did 5% of Czechs and 15% of Slovenians who reported attending church weekly.

Multivariate

The ordinary least-squares analysis for both the Czech Republic (Table 3) and Slovenia (Table 4) confirm that metaphysical beliefs—and not just traditional, institutional religiosity—are independently associated with fertility desires. In both countries, when the belief variables are included without any religiosity controls, they show large and significant relationships; women who believed in a life force or a personal God desired 0.1–0.3 more children than nonbelievers (model 1). In each case, these associations remain significant when religiosity controls are added. The religiosity measures, in the absence of the belief variables, are generally significant, but inclusion of the belief variables decreases these coefficients and in some cases makes them nonsignificant.

For the Czech Republic, the coefficients for the importance of religion (0.12) and for labeling oneself religious (0.29) decrease by about half (to 0.07 and 0.18,

TABLE 3. Coefficients from ordinary least-squares regressions assessing associations between selected characteristics and fertility desires, Czech Republic

Characteristic	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Belief in God							
Life force	0.14***		0.10**		0.12**		0.10**
	(0.04)		(0.04)		(0.04)		(0.04)
Personal God	0.30***		0.20**		0.20**		0.19**
	(0.05)		(0.06)		(0.06)		(0.06)
Religiosity							
Importance of religion		0.12***	0.07**				
		(0.02)	(0.03)				
Religiousness							
Not religious (ref)	na	na	na	na	na	na	na
Religious				0.29***	0.18**		
				(0.05)	(0.06)		
Somewhat religious				0.12*	0.04		
				(0.05)	(0.06)		
Church attendance						0.10***	0.07***
						(0.01)	(0.02)
Background							
No. of children	0.62***	0.62***	0.62***	0.62***	0.62***	0.62***	0.62***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Age	–0.04***	–0.04***	–0.04***	–0.04***	–0.04***	–0.04***	–0.04***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education	0.01	0.02	0.02	0.02	0.01	0.02	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Married	–0.20***	–0.20***	–0.20***	–0.19***	–0.20***	–0.20***	–0.20***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Constant	*2.41****	*2.26****	*2.31****	*2.39****	*2.38****	*2.31****	*2.32****
	(0.09)	*(0.10)*	*(0.10)*	*(0.09)*	*(0.09)*	*(0.09)*	*(0.09)*
R^2	*0.49*	*0.49*	*0.50*	*0.49*	*0.50*	*0.49*	*0.50*
Adjusted R^2	*0.49*	*0.49*	*0.49*	*0.49*	*0.50*	*0.49*	*0.50*
F	*151.24*	*180.21*	*131.87*	*150.79*	*116.16*	*183.56*	*134.46*

*p<.05. **p<.01. ***p<.001. *Notes:* Importance of religion is measured on a four-point scale; church attendance is measured on a six-point scale; education is measured on a seven-point scale; number of children and age are continuous. All other characteristics except religiousness are measured dichotomously. Figures in parentheses are standard errors. ref=reference group. na=not applicable.

respectively) when the belief variables are included. The coefficient for being somewhat religious drops into nonsignificance when the belief variables are controlled for, suggesting that the differences in fertility desires between the marginally religious and the nonreligious are more attributable to differences in their belief than in their religious practice. The coefficient for church attendance decreases by about one-third (from 0.10 to 0.07) when controls for belief in God are added to the analysis.

In Slovenia, the coefficient for importance of religion is cut almost in half (from 0.10 to 0.06) when belief is controlled for. Labeling oneself religious becomes nonsignificant once belief in God is controlled for, and being marginally religious is not significant whether or not belief in God is controlled for. The coefficient for church attendance decreases from 0.07 to 0.05 when belief is included.

Notably, the coefficients for the belief variables are reduced when the conventional religious variables are controlled for, suggesting that the positive correlations between the two concepts and fertility intentions have some overlap, an unsurprising finding given their conceptual relatedness. However, in all models, both belief in a personal God and the less traditional belief in a life force retain independent statistical significance when conventional religiosity is controlled for. With the religiosity controls, in both countries, believers in a personal God wanted approximately 0.2 more children, and believers in a higher power wanted approximately 0.1 more children, than nonbelievers. Given the extremely low fertility in these countries—the 1997 Czech total fertility rate was 1.2, and the 1995 Slovenian total fertility rate was 1.3[25]—these results represent substantial proportional differences in fertility desires.

DISCUSSION

This study demonstrates an independent association between belief in God and fertility intentions. Although it does not empirically establish a causal relationship, there are theoretically plausible ways that this association could play out in relation to institutional religiosity. Belief in God could be acting as a mediator in the relationship

TABLE 4. Coefficients from ordinary least-squares regressions assessing associations between selected characteristics and fertility desires, Slovenia

Characteristic	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Belief in God							
Life force	0.12***		0.10**		0.11**		0.09**
	(0.04)		(0.04)		(0.04)		(0.04)
Personal God	0.25***		0.19***		0.21***		0.17***
	(0.04)		(0.05)		(0.05)		(0.04)
Religiosity							
Importance of religion		0.10***	0.06**				
		(0.02)	(0.02)				
Religiousness							
Not religious (ref)	na	na	na	na	na	na	na
Religious				0.15***	0.06		
				(0.04)	(0.05)		
Somewhat religious				0.01	–0.02		
				(0.05)	(0.05)		
Church attendance						0.07***	0.05***
						(0.01)	(0.01)
Background							
No. of children	0.63***	0.62***	0.62***	0.63***	0.63***	0.62***	0.62***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Age	–0.05***	–0.05***	–0.05***	–0.05***	–0.05***	–0.05***	–0.05***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education	0.03*	0.04**	0.04**	0.04**	0.03*	0.04**	0.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Married	–0.25***	–0.27***	–0.27***	–0.27***	–0.26***	–0.27***	–0.27***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Constant	*2.84****	*2.66****	*2.69****	*2.84****	*2.81****	*2.68****	*2.66****
	(0.08)	*(0.09)*	*(0.09)*	*(0.09)*	*(0.09)*	*(0.09)*	*(0.09)*
R^2	*0.29*	*0.29*	*0.30*	*0.29*	*0.30*	*0.29*	*0.30*
Adjusted R^2	*0.29*	*0.29*	*0.29*	*0.29*	*0.29*	*0.29*	*0.30*
F	*154.60*	*182.22*	*133.35*	*150.10*	*116.22*	*187.14*	*136.79*

*p<.05. **p<.01. ***p<.001. *Notes:* Importance of religion is measured on a four-point scale; church attendance is measured on a six-point scale; education is measured on a seven-point scale; number of children and age are continuous. All other characteristics except religiousness are measured dichotomously. Figures in parentheses are standard errors. ref=reference group. na=not applicable.

between religiosity and fertility intentions. People who are religiously affiliated are more likely than others to believe in God, and this could account for some of the relationship between religion and pronatalism. If some of the religiosity-fertility relationship is attributable to belief in God, then controlling for belief in God would decrease the coefficient for religiosity. Alternatively, religiosity could be acting as a mediator for belief in God; people who believe in God are more likely than nonbelievers to join religious institutions that support pronatalist norms. The fact that the coefficients for both religiosity, variously defined, and belief in God decrease when included in the same model, as well as the close conceptual and empirical relatedness between institutional religiosity and belief in God, suggests that there are probably some influences going in both directions.

Whatever the exact dynamics involved, the existence of an independent relationship between metaphysical beliefs associated with religion and fertility desires opens up a new perspective on the religiosity-fertility question. Belief in a life force alone does not provide a mechanism for the dissemination of and adherence to theological dogma, does not provide a community to create and reinforce social norms and worldviews, and is not associated with a broader schema of "family values."

This addition to the paradigm potentially has implications for understanding the effects of secularization on declining fertility rates, suggesting that different stages or types of secularization may have differing effects, depending on which dimensions of religiosity are affected. A decline in formal churchgoing, which can easily be measured, is undoubtedly correlated with decreased fertility intentions; but a later, less empirically noticeable change in more individualized metaphysical beliefs may also be. The process of secularization may continue to change fertility intentions in a country even after a significant proportion of the population have become unchurched.

These results also have potential implications for the evolutionary psychology literature on the origins of religious belief. Many evolutionary perspectives see religious belief as a byproduct of other fitness-enhancing traits, rather than

a direct outcome of Darwinian selection.[26] Others have hypothesized about different mechanisms through which religion may be adaptive; for example, it may increase group cohesion by requiring costly rituals and activities that enhance trust within the community and deter free riders.[27] If, however, a belief in God is somehow causally associated with a greater desire to have children and parent, religious belief may increase human fitness rather directly.[28]

This study also contributes to the literature by using two countries that have previously not been studied in regard to the religiosity-fertility question and that, despite some shared historical characteristics, are completely distinct political and sociocultural communities. The lack of formal institutional religious influence and the relatively high proportions of their populations maintaining agnostic, atheistic or individualized metaphysical beliefs make these two countries ideal for testing the hypothesis that metaphysical beliefs are independently associated with fertility. However, the use of only these two countries limits the generalizability of this study, which does not presume to have discovered a universal association between belief in God and fertility intentions.

Ultimately these cross-sectional results should act as a starting point for future research on the effects of different dimensions of religiosity on fertility intentions in various contexts. Future work should expand beyond the use of single-item self-reported measures of religiosity, thereby properly treating religion as the multidimensional construct that it is. Additionally, the use of psychological indices with demonstrated construct validity would be a useful addition to fertility intention studies in general, but would be especially pertinent to the religiosity-fertility question for the purposes of getting underneath the surface of the very general patterns found so far in the literature.

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