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# Interrelations Between Religiosity, Mental Health, and Children

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# Interrelations Between Religiosity, Mental Health, and Children

## **Abstract**

This dissertation consists of three independent but related research articles dealing with religiosity, mental health, and children. The first uses the General Social Survey to perform the first large-N, non-convenience-sample analysis of the relationship between belief in God and sense of purpose. Using logistic regression analysis I find that there is a positive association, expanding our knowledge of the association between religious frameworks on a particular facet of mental health. The second article uses OLS to test the relationship between belief in God and fertility intentions in the Czech Republic and Slovenia using the European Fertility and Family Survey, once again finding positive relationships between belief in God or belief in a higher power and fertility intentions. This finding is theoretically important because the prior literature has tended to invoke directly institutional mechanisms in the fertility/religion relationship without considering the possibility that more individuated forms of religiosity may have independent associations. Finally, the third article uses the General Social Survey (and, once again, OLS) to test the role of religiosity as a moderator in the relationship between number of children and happiness. The literature on children and happiness has progressed beyond simple associations, but the literature incorporating concrete social moderators is still in its infancy, and especially social moderators whose influences are vectored through ideational, and not necessarily material, associations. I make the theoretical argument that, as religiosity in the United States tends to be associated with pronatalist norms and culture, and as happiness is positively associated with fulfilling sociocultural imperatives, then, all things being equal, the more religious will have a higher happiness effect (or lower unhappiness effect) from their children than the less religious. Using General Social Survey data, my empirical analyses empirically confirm this hypothesis, showing a positive and significant interaction term between religion and child number, representing a higher happiness association with child number for the religious. This interaction is partially explained by another interaction term between higher ideal family size (measuring pronatalist tendencies), but this second interaction does not explain all of the religiosity/children interactive effect.

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Jason Schnittker

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INTERRELATIONS BETWEEN RELIGIOSITY, MENTAL HEALTH, AND  
CHILDREN

Stephen Cranney

A DISSERTATION

in

Demography and Sociology

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2015


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## ABSTRACT

### INTERRELATIONS BETWEEN RELIGIOSITY, MENTAL HEALTH, AND CHILDREN

Stephen Cranney

Jason Schnittker

This dissertation consists of three independent but related research articles dealing with religiosity, mental health, and children. The first uses the General Social Survey to perform the first large-N, non-convenience-sample analysis of the relationship between belief in God and sense of purpose. Using logistic regression analysis I find that there is a positive association, expanding our knowledge of the association between religious frameworks on a particular facet of mental health. The second article uses OLS to test the relationship between belief in God and fertility intentions in the Czech Republic and Slovenia using the European Fertility and Family Survey, once again finding positive relationships between belief in God or belief in a higher power and fertility intentions. This finding is theoretically important because the prior literature has tended to invoke directly institutional mechanisms in the fertility/religion relationship without considering the possibility that more individuated forms of religiosity may have independent associations. Finally, the third article uses the General Social Survey (and, once again, OLS) to test the role of religiosity as a moderator in the relationship between number of children and happiness. The literature on children and happiness has progressed beyond simple associations, but the literature incorporating concrete social moderators is still in its infancy, and especially social moderators whose influences are vectored through ideational, and not necessarily material, associations. I make the theoretical argument

that, as religiosity in the United States tends to be associated with pronatalist norms and culture, and as happiness is positively associated with fulfilling sociocultural imperatives, then, all things being equal, the more religious will have a higher happiness effect (or lower unhappiness effect) from their children than the less religious. Using General Social Survey data, my empirical analyses empirically confirm this hypothesis, showing a positive and significant interaction term between religion and child number, representing a higher happiness association with child number for the religious. This interaction is partially explained by another interaction term between higher ideal family size (measuring pronatalist tendencies), but this second interaction does not explain all of the religiosity/children interactive effect.

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## INTRODUCTION

Taken together my three dissertation chapters sit at the thematic nexus of religiosity, pronatalism, and mental health. Each of the chapters addresses a unique perspective in their respective research question. In each case there are variables or approaches that have been largely neglected, but which have potentially important implications for their respective literatures as a whole. In all three, relations between the very general concept of religiosity and the dependent variable of interest are examined and broken down into more basic component parts. In the first two chapters, belief in God in particular is examined to see if it has any independent associations with the dependent variables of interest when generic religiosity is controlled for. While belief in God or a higher power may seem like an idiosyncratic variable of interest, it is a necessary ingredient in the concept of religiosity (Stark 2004), and is what categorically separates religious rituals from inaugurations, masonic rituals, graduation ceremonies, and other rituals that would not normally be considered religious. Conceptually, therefore, belief in God or a higher power is an important facet of religion, and it therefore makes sense to examine its independent associations with variables that are often seen as having some relation to religiosity more generally.

The first chapter does this by examining the relationship between belief in God and sense of purpose using the General Social Survey. This article is the first one to explicitly test this relationship using a large-N study, which is surprising given how much speculation there has been about the relationship between these two variables. Prior literature had relied on small-N convenience samples, and had tested concepts related to religious belief, but mine directly tests belief in a God or a higher power. While religion

in general has been shown to have a variety of associations with mental health in general, much of the literature on the subject has expanded our knowledge of the relationship between these two variables by breaking mental health and/or religiosity into its different dimensions or component parts and analyzing relations between the pieces separately in order to make our knowledge of them more comprehensive. This study continues to do this, particularly focusing on two variables that are often theoretically connected but whose relationship with one another have not been empirically analyzed in a substantive way.

The second chapter also uses belief in God as its primary religious variable of interest, and tests its association with fertility intentions in the Czech Republic and Slovenia using the European Fertility and Family Survey. While the fertility/religion literature has generally been focused on Western Europe, India, and the United States, mine is the first paper of which I am aware that tests for relations between fertility and religion in an Eastern European context. This is a theoretically important area of the world as they are some of the most secular countries in the world. The use of the “belief in God” variable in a fertility study may seem idiosyncratic, but it’s an attempt to approach a dimension of religiosity that is not necessarily vectored through an institutional context, which is important in this case because virtually the entire literature on the subject has assumed that the positive relationship between religiosity and fertility is due to particular social or theological characteristics of religious groups even when the religiosity affect has been shown to operate across religious traditions. As religiosity has been shown to be associated with a variety of cognitive and psychological dispositions, it is also likely that these may also be at least partially responsible for the relationship, even

if they interact with institutional religiosity. While I don't directly test any of these dispositions, by testing an independent relationship between fertility intentions and a metaphysical belief while controlling for baseline institutional religiosity I open up a door for a new approach in the literature.

The third chapter also attempts to expand a new direction in the literature by using the General Social Survey to look at religiosity and its attendant pronatalism as moderators in the relationship between children and happiness. Given the high proportion of people in the world who indicate that religion is important in their lives, these results are substantively important. While I was not the first to suggest that the children/happiness literature isn't very informative without taking beliefs about childbearing and rearing into account, there have been very few studies that have explicitly incorporated measures of attitudes into their models. Furthermore, none of which I am aware have addressed social characteristics that are associated with fertility attitudes. Given religiosity's connection in the literature with fertility intentions, using religiosity as a moderator seemed like a natural starting point to examine how background characteristics influence attitudes towards children, which in turn influence mental health gains or costs from having children.

These three studies address research questions involving religiosity by zeroing in on component parts of or frameworks associated with religiosity that are theoretically unique, but have the potential to open up new directions in the literature. Whereas religiosity is often treated with a single-item measure without much concern for unpacking its fundamental aspects, at its core religiosity includes metaphysical or

worldview beliefs that can also be isolated and independently tested for relations. These three dissertation chapters are an attempt to do so.

## CHAPTER 1: DO PEOPLE WHO BELIEVE IN GOD REPORT MORE MEANING IN THEIR LIVES? THE EXISTENTIAL EFFECTS OF BELIEF

### **Introduction**

Religion and spirituality are often seen in terms of their meaning-giving function. Indeed, “many people think of the question of life meaning as a religious question” (Baumeister 1991). Geertz (1973) argues that today meaning making is the fundamental function of religious belief. Some theorists and theologians argue that the sense of purpose provided by religious faith is unobtainable through naturalistic means (Frankl 1969:145; Niebuhr 1943); but this is contended by other theorists (Maslow 1966). Whatever the philosophical case for any particular attitude towards the God/meaning connection, the fact is that for many, if not most people in the United States, God plays a fundamental role in their sense of meaning (Emmons 2003; Park 2005). Here I ask whether the concept of God is successful in fulfilling its meaning-imparting function that is often ascribed to it. In other words, do people who believe in God actually report a higher sense of purpose in their life?

### **Literature Review**

Considering both the association many Americans make between God and their personal sense of purpose and the hypothesized intervening role that existential factors play in religiosity-driven health differentials (Chamerlain and Zika 1988; Schnittker 2001; Seeman, Dubin, and Seeman, 2003), this is a topic that deserves investigation. While some studies have dealt with the theme of general religious influences on sense-of-purpose, none have parsed out the effects belief in God specifically. McFadden suspects that lack of follow-up about which types of religious belief contribute to existential



meaning may be attributed to a “lack of theological knowledge among social scientists” (2000:176). The inherently abstract nature of belief makes treating and operationalizing theological distinctions difficult.

This lacuna is especially salient in regards to the issue of belief in God, since this is a component of belief that is often directly associated with meaning (Park 2005:295). However, some studies have abutted on similar themes by treating the more general relationship between religious belief and meaning in life. Martos, Thege, and Steger (2010) use a sample of Hungarian psychology students to measure literality of belief on various indicators of meaning as represented by several composite indices, some of which incorporated notions of God, and find that a general flexibility of beliefs, openness to new beliefs, and a more symbolic approach to belief contribute to the sense of meaning that their sample derives from their religious beliefs. Pöhlmann, Gruss, and Joraschky (2006) address the hypothesis that attention to religious issues lead to more sophisticated meaning systems when they compared the self-reported meaning levels and frameworks of a sample of 59 theology and science students using a series of comparison-of-means tests, finding that theology students “presented a more differentiated, elaborated, and coherent personal meaning systems than the science students” (Pöhlmann, Gruss, and Joraschky 2006:109). French and Joseph (1999) find that positive attitudes towards Christianity were associated with higher scores on the Purpose in Life Test in a sample of 101 undergraduates. Dezutter, Soenens, and Hutsebaut, (2006) use the same Purpose in Life Test, but incorporate it into a broader measure of psychological wellbeing that they then test on an indicator of symbolic versus orthodox belief, finding that literalist beliefs have negative associations with psychological wellbeing. As one of the most commonly

reported sources of existential fulfillment in believers (Park 2005), the connection between belief in God and sense of purpose merits its own unique analysis.

While the prior literature is altogether distinct from my own study, there are several advantages that my study has over previous studies addressing religiosity and sense of purpose. The samples previously used were relatively small: 330 and 437 for Martos, Thege, and Steger (2010), 59 for Pöhlmann, Gruss, and Joraschky (2006), 101 for French and Joseph (1999), and 427 for Dezutter, Soenens, and Hutsebaut (2006). In comparison, my smallest model has a sample size of 2,204, which helps produce a relatively large sample of rare subpopulations such as nonbelievers. All of the prior studies cited relied on convenience samples: primarily student populations. In contrast, the General Social Survey (hereafter GSS) randomly draws its subjects from the entire non-institutionalized U.S. population. The Purpose in Life Test, used in three of the four studies cited, incorporates concepts such as enthusiasm, belief in free will, preparation for death, etc. (Crumbaugh and Maholick 1964), which although related to purpose and useful in other research contexts, has the potential to obfuscate when the variable of interest is simply belief that life has purpose. The simple question supplied by the GSS parsimoniously and directly addresses the concept of purpose in its simplest sense. In brief, this study is the first of its kind to measure the relationship between several categories of belief in God and sense of purpose, and it has the sample size to do so effectively.

## **Theory**

The cognitive mechanisms underlying a relationship between belief in God and sense of purpose are difficult to untangle; however, there are several plausible theoretical

reasons for why such a relationship would exist. Frankl (1959) argues that a reliable sense of purpose must be grounded outside of the material, and a belief in a spiritual, metaphysical absolute as represented in a God figure may provide this transcendental locus for a grounded sense of purpose. Terror Management Theory posits that religious belief serves the function of obviating the sense existential anxiety arising from the inevitability of biological death by promising the continuation of being after death (Vail et al. 2010). By believing in the author of a framework that includes an afterlife, believers do not have to deal with the same anxieties naturally accompanying the idea of existential oblivion that nonbelievers do.

Belief in God may also provide believers with a unifying framework that lends itself to confidence in the existence of purpose, whereas alternatives can be naturally more fragmented, leading to the possibility of conflicting goals and aims that can lead to an existential crisis (Emmons 2005:738). An individual's belief that her or his goals and aims of existence are derived from a supreme God can lend weight to the substantive importance of such aims for the individual (Frankl 1955:xv).

### **Measures of Sense of Purpose and Belief in God**

Hood and colleagues correctly note: “there is a kind of scientific vagueness to the idea of ‘meaning’” (2009:15). However, “social scientists have been warming to [existential meaning] and gradually recognizing that despite its vague and boundless nature, that it can be fruitfully and seriously investigated” (Debats 2000). Various instruments have been constructed in an attempt to parse out various dimensions of what is meant by “meaning” (Martos, Thege, and Steger 2010; Reker 2000), and further

empirically grounded conceptual exploration of meaning will undoubtedly be forthcoming.

Here I use a simple question asked in the GSS in 1998 and 2008 that uses a five-level Likert item (“strongly agree” to “strongly disagree”) to measure responses to the statement “In my opinion, life does not serve any purpose.” This simple question directly gauges the degree to which the respondent feels they can agree with what is essentially a nihilistic worldview.

This question addresses what is referred to by Steger and colleagues (2009) as the *presence* of meaning dimension, which is simply whether one sees meaning in life or not. The lack of purpose in one's life is closely related to the concept of existential anxiety theorized about by Tillich (1952) among others, and empirically operationalized by Weems and colleagues (2004) using confirmatory factor analysis to categorize various questions. Particularly relevant to the GSS question is their “emptiness and meaninglessness” factor that covers responses to “I often feel anxious because I am worried that life might have no meaning,” “I never think about emptiness,” and “I often think that the things that were once important in life are empty” (Weems et al. 2004:390). Also related to the GSS phrasing is Schnell's Crisis of Meaning Index, which incorporates responses to the questions “I don't see any sense in life,” and “when I think about the meaning of life I find only emptiness” (2009:488).

Just as the concept of purpose is inherently nebulous, so is the concept of God. It is difficult to determine what exactly people mean when they claim to believe in God. As Russell puts it, “‘God’ had a perfectly definite meaning; but ... the word has become paler and paler, until it is difficult to see what people mean when they assert that they

believe in God” (1957:31). Durkheim complains about the difficulty of distinguishing between philosophy and theology once God become a symbolic “moral ideal personified” (Pickering 1994). On a more contemporary note, O'Connor and Chamberlain (2000) report that in their textual analyses of responses about God and meaning, many people located their sense of meaning in a non-specific source of supernatural power that the authors label “not God” (85). The lack of terminological clarity here is one of the limitations of this study, and indeed of any study about belief in God.

However, the GSS wording anticipates this concern. Specifically, the six-point question for the variable “God” includes an option for (1) atheist (“I don't believe in God”), (2) agnostic (“I don't know whether there is a God and I don't believe there is any way to find out”), (3) belief in a higher power but not necessarily a God (“I don't believe in a personal God, but I do believe in a higher power of some kind” (4) believes but has some doubts (“I find myself believing in God some of the time, but not at others,” (5) “while I have doubts, I feel that I do believe in God,” respectively), and (6) believes in God with surety (“I know God really exists and I have no doubts about it”). Since these options are all mutually exclusive, for the purposes of this study I operate under the working assumption that the more pantheistic notions of God would fit into the “higher power” category, while choices 4, 5, and 6 that deal with “God” would be reserved for the idea of a God figure as conventionally understood. While there may still be some respondents mark a surety of belief when for all relevant purposes their metaphysical beliefs are identical to those of a self-identified atheist or agnostic, with the difference of opinion simply being one of definitions, I believe that the GSS phrasing makes such a possibility a negligible threat to external validity.

I break the 6-item scale that the GSS provides into four categories, each measured as a dummy variable: “No Belief” (option 1 or 2), “Higher Power” (option 3) “Believes-Doubts” (option 4 or 5) with “Sure Belief” (option 6) representing 62% of the total sample. It is not completely apparent how the two “Believes-Doubts” options are related to each other or the other categories, or how relevant the nuanced distinctions between the wordings are; therefore, to conceptually simplify the analysis, I collapse these categories into one group of “Believes-Doubts.” I am forced to merge the “don't believe” and “no way to find out” categories (n= 76 and 118, respectively), into one representing people with no positive belief in God in order to gain sufficient power, although exploring differing existential implications of atheism and agnosticism is a worthy subject for future research. Separate sets of summary statistics for 1998 and 2008 (the two years used) describing where these categories fall on the GSS nihilism scale are found in Tables 1 and 2.2. Regardless of their beliefs, the majority of the respondents tend to either “strongly disagree” or “disagree” with the statement, suggesting that most of the relevant variation is to be found between these two options.

**Table 1**

## 1998 Frequencies

	No Belief	Believes-Doubts	Higher Power	Believes-Sure	Total
Strongly agree	0 (0)	2 (.175)	3 (.262)	4 (.349)	9 (.785)
Agree	6 (.524)	4 (.349)	7 (.611)	12 (1.047)	29 (2.531)
Neither agree nor disagree	17 (1.483)	14 (1.222)	19 (1.658)	24 (2.094)	74 (6.457)
Disagree	22 (1.920)	35 (3.054)	98 (8.551)	252 (21.990)	407 (35.510)
Strongly disagree	44 (3.839)	53 (4.625)	94 (8.202)	436 (38.050)	627 (54.710)
Total	89 (7.766)	108 (9.424)	221 (19.280)	728 (63.530)	1146 (100)

Note: Frequencies; cell percentages in parentheses. N=1146. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 2**

## 2008 Frequencies

	No Belief	Believes-Doubts	Higher Power	Believes-Sure	Total
Strongly agree	2 (.149)	0 (0)	0 (0)	10 (.746)	12 (.895)
Agree	1 (.075)	2 (.149)	5 (.373)	18 (1.342)	26 (1.939)
Neither agree nor disagree	9 (.671)	13 (.969)	19 (1.417)	24 (1.790)	65 (4.847)
Disagree	39 (2.908)	59 (4.400)	119 (8.874)	269 (2.060)	486 (36.240)
Strongly disagree	54 (4.027)	66 (4.922)	133 (9.918)	499 (37.210)	752 (56.080)
Total	105 (7.830)	140 (1.440)	276 (2.580)	820 (61.150)	1341 (10.000)

Note: Frequencies; cell percentages in parentheses. N=1,341. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

## Methods

While standard OLS regressions are occasionally used for Likert item measures, such an analysis relies on an assumption of normally distributed data. The variable used here is left-skewed. Specifically, 5 (strongly disagree) = 56.31% of respondents, 4=35.22%, 3=5.29%, 2=2.24%, and 1=.94%. Therefore, the assumption of normal distribution is not met. The next obvious choice would be an ordered logistic analysis. However, a Brant test indicates that the proportional odds assumption required for such an analysis is also not met in this case. The effect of going from “strongly disagree” is not close enough to the effect of going from “disagree” to “neither agree nor disagree” and below to merit the assumption of equal effects across the range of the dependent variable. This is probably due to the lack of power that is the natural consequence of some of the smaller subpopulations. As previously noted, the main division in the data happens between those who “strongly disagree” and those who merely “disagree”; therefore, a logistic regression based on this divide should capture most of the relevant variation. The dichotomous variable used has a value of one for “strongly disagree” and zero for everybody else.

The GSS asked the purpose question in the years 1991, 1998, and 2008. However, the 1991 survey does not have a measure for generic religiosity, so once this term is included in the regression the 1991 data is omitted. Therefore, for the sake of sample consistency across models, I exclude the 1991 data and retain the 1998 and 2008 data. The 1998 and 2008 data have 89 and 105 nonbelievers, respectively, yielding a sample of 194 of the relatively rare US non-believing population.



While these two sets of data are ten years apart, interacting the effect of the year 2008 and each of the belief categories yields no significant interaction terms, suggesting that the relationship did not significantly change from 1998 to 2008. I also include an insignificant control for the 1998 sample in my last model to show that the inclusion of year-fixed effects does not substantively change the coefficients.

For Model 1, I simply use my belief-based categorical variables of interest as predictors of whether they “strongly disagree” with the nihilistic statement (Table 3). In Model 2 and all subsequent models I include a very general set of controls that are related to mental health, metaphysical worldviews, and a wide range of other characteristics: specifically age (in units of ten years), race (other race and black, with white as the omitted reference), region-fixed effects (based on the nine region scheme that the GSS uses), sex, and SES. To control for SES I include inflation-adjusted family income (in units of 10,000, standardized to year 2000 values), and years of education.

**Table 3**

## Life Purpose (Odds Ratios)

	(1)	(2)	(3)	(4)
No belief	.669 <sup>**</sup> (-2.630)	.477 <sup>***</sup> (-4.320)	.670 <sup>*</sup> (-2.060)	.670 <sup>*</sup> (-2.060)
Believes-doubts	.551 <sup>***</sup> (-5.730)	.507 <sup>***</sup> (-5.920)	.594 <sup>***</sup> (-4.270)	.593 <sup>***</sup> (-4.280)
Higher power	.605 <sup>***</sup> (-3.660)	.531 <sup>***</sup> (-4.130)	.671 <sup>*</sup> (-2.380)	.670 <sup>*</sup> (-2.390)
Age (/10)		.993 (-.240)	.961 (-1.400)	.958 (-1.480)
Male		.697 <sup>***</sup> (-3.950)	.701 <sup>***</sup> (-3.810)	.701 <sup>***</sup> (-3.810)
Black		.898 (-.800)	.858 (-1.090)	.854 (-1.120)
Other race		.634 <sup>**</sup> (-2.700)	.649 <sup>*</sup> (-2.480)	.645 <sup>*</sup> (-2.510)
Family income		1.051 <sup>***</sup> (3.930)	1.045 <sup>***</sup> (3.400)	1.045 <sup>***</sup> (3.350)
Years education		1.139 <sup>***</sup> (7.520)	1.128 <sup>***</sup> (6.850)	1.128 <sup>***</sup> (6.850)
Religious person			1.276 <sup>***</sup> (4.090)	1.278 <sup>***</sup> (4.100)
Happy			1.266 <sup>**</sup> (3.240)	1.271 <sup>**</sup> (3.290)
Year 1998				.934 (-.740)
Region-fixed effects?	No	Yes	Yes	Yes
Constant	1.525 <sup>***</sup> (8.120)	.298 <sup>***</sup> (-4.450)	.036 <sup>***</sup> (-5.920)	.037 <sup>***</sup> (-5.870)
<i>N</i>	2487	2221	2204	2204
<i>BIC</i>	3407.400	2942.300	2949.800	2956.900
$\chi^2$	42.030	181.000	225.900	226.500
Log likelihood	-1688.000	-1432.600	-1397.900	-1397.600

Note: Exponentiated coefficients; *t* statistics in parentheses.

+*p* < .10

\*  
*p* < .05

\*\*  
*p* < .01

\*\*\*  
*p* < .001.

Belief factors risk proxying for a more generalized sense of religiosity; therefore, in Models 3 and 4 I include a control for self-identified level of religiosity (an answer to the question of “to what extent do you consider yourself a religious person.) While the GSS survey has 1=very religious and 5=not religious, I have inverted this measure to make it more intuitive. Finally, testing an indicator of sense of purpose alone may risk conflating a true sense of purpose with generic happiness. Because the two are correlated, not controlling for general happiness risks subtly turning the models into predictors of general happiness rather than sense of purpose about life. In Models 3 and 4 I include a control for self-reported happiness based on the GSS's tripartite categorization. Once again I have inverted the measure to make it more intuitive: “not too happy”=1, etc. In Model 4, I include the control for the year 1998, with 2008 as the base year.

## **Discussion**

Is belief in God related to a higher sense of purpose? The answer appears to be a qualified yes. The association appears to be reserved for those who indicate that they “know God exists.” Of the three other categories, those who indicate a belief in more abstract notions of divinity (“higher power”) and the non-believers have the next highest level of sense of purpose about life, with those who report some degree of uncertainty having the lowest coefficient. However, the statistical distinctions between these latter three categories are statistically insignificant in all models; belief in a “higher power” or an occasionally doubting belief does not appear to contribute to a higher sense of purpose any more than non-belief; however, once again the lack of non-believers in the survey hazards the possibility of a Type II error, or a false negative. The relationship between a

sure belief in God and sense of purpose appears to be substantively significant, with odds ratios of being in the “strongly disagree” category ranging from about .48-.67 across the models. Both measures of SES—family income and education—are positively associated with sense of purpose while controlling for one another. Being male and belonging to the “other race” category are both negatively associated with sense of purpose. Religiosity and happiness are both positively and highly significant, and their inclusion changes the magnitude of the belief coefficients, although this effect is not large. While not the main emphasis of this paper, it is worth noting that the findings for sex challenge the findings of the prior literature that find a positive relationship with marital status and an insignificant or positive relationship with being male (see Schnell 2009 for a review of the demographic correlates of sense of purpose).

It appears that a belief that exhibits less skepticism or abstractness tends to be associated with a higher chance of “strongly disagreeing” with the nihilistic statement. These results accord with the Emmons' (2005) theory that predicts that people with the relatively unified metaphysical framework provided by strong religious beliefs will have a firmer sense of purpose than more fragmented alternatives. The fact that the believers in a higher power and those who believe but doubt are also significantly different from the sure believers support Vail and colleagues' finding that more flexible belief systems “embrace uncertainty and ambiguity,” a tendency which, while avoiding some the potential religious strictures of fundamentalist religious belief, also potentially allows for existential uncertainty (2010:89).

While these associations appear robust and consistent with various theoretical perspectives, without panel or experimental data I am prevented from drawing causal

conclusions; it could be that people with a higher sense of purpose are naturally drawn more towards belief, or that there is a deeper cognitive mechanism that causes both. Very few people in the GSS sample were willing to mark that they believed in complete nihilism (.8%), which confirms the fact that as humans we have a strong, fundamental urge to seek for or construct purpose in our lives in some form or another (Frankl 1969). For many personal sense of purpose is completely autonomous of any notion of God, suggesting that they find this psychologically vital sense of purpose elsewhere. Consequently, the effectiveness of God as a source of purpose implies a comparison with secular alternatives. While there is a promising, burgeoning literature on non-believer studies (Zuckerman 2011), the available data do not allow me to go into detail about what these alternatives are, and therefore I am prevented from speculating further.

## **Conclusion**

I have presented a unique analysis of a fundamental question that until now has remained unaddressed: do those who believe in God have a greater sense of purpose about life? While I have ventured some hypotheses, ultimately the why behind this is relationship is unknown. Also, the fact that most of the variation lies between the “strongly disagree” and “disagree” options raises the question of what the real-world difference between these two options is, and whether the difference is substantively meaningful. Without more detailed data, it is difficult to say. Given the complicated nature of the concepts involved, future qualitative and quantitative studies should carefully dissect the underlying mechanisms connecting various forms of belief in God with self-reported purpose in life to give a more thorough explanation of this relationship.

## CHAPTER 2: THE ASSOCIATION BETWEEN BELIEF IN GOD AND FERTILITY DESIRES IN SLOVENIA AND THE CZECH REPUBLIC

### **Introduction**

The association between religiosity and fertility has been extensively investigated, and the virtually unanimous finding is that in the United States (Hayford & Morgan 2008), in Spain (Adsera 2006) and in Europe generally (Frejka & Westoff 2008, Philipov & Berghammer 2007) 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 (Brañas-Garza & Neuman 2007). 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,” (Philipov & Berghammer 2007, 272) “the [strong] association between religion and conservative family values,” (Hayford & Morgan 2008, 1180) and “the high value the Church places on family” (Adsera 2006, 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 (Brañas-Garza & Neuman 2007).

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 (1971). 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 (Jones & Nortman 1968; Westoff &

Jones 1979) Mormons (Heaton & Calkins 1983) and indigenous African tribes (Caldwell & Caldwell 1987).

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 (2004). 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. 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 (Hayford & Morgan 2008). 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” (Bulanda 2011, 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 burgeoning 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) (Guthrie 1993) teleological framing (imputing purpose to objects and occurrences-Kelemen & Rosset 2009) and mentalizing (thinking about and inferring others' mental states-Norenzayan, Gervais, & Trzesniewski 2012) have been suggested as having some causal association with belief in supernatural agents, although the strength of their associations has varied in empirical analyses (Willard & Norenzayan 2013).

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 (Lesthaeghe & Wilson 1986). 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 (Stark & Finke 2000). 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 long-standing 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 (Pikel 2008). 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 (Pikel 2008). In both of these countries, belief in some sort of spirit or life force is more common than belief in a personal God (Tomka 2011). Similarly, a significant proportion of both the Czech (Berglunc 2010) and the Slovenian (Tomka 2011) 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 (Pikel 2008). 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—author’s own calculations).

## **Methods**

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).

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 (2008); if women replied to the question on fertility desire with a range, the average of the two numbers was used.

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.

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.

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 (Economic Commission for Europe 1992).

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 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 (Hayford & Morgan 2008; Adsera 2006), ordered logit (Philipov & Berghammer 2007) logit (Frejka & Westoff 2008) and comparison of raw total fertility rates (Kaufmann 2011). 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

**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).

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.

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

Belief	Total	Religious	Somewhat religious	Not religious
<b>Czech Republic</b>	(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
<b>Slovenia</b>	(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
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Note: Percentages may not total 100 because of rounding.

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.

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.

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, respectively) when the belief variables are included.

**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
<b>Belief in God</b>							
Life force	0.14*** (0.04)		0.10** (0.04)		0.12** (0.04)		0.10** (0.04)
Personal God	0.30*** (0.05)		0.20** (0.06)		0.20** (0.06)		0.19** (0.06)
<b>Religiosity</b>							
Importance of religion		0.12*** (0.02)	0.07** (0.03)				
<b>Religiousness</b>							
Not religious (ref)	na	na	na	na	na	na	na
Religious				0.29*** (0.05)	0.18** (0.06)		
Somewhat religious				0.12* (0.05)	0.04 (0.06)		
Church attendance						0.10*** (0.01)	0.07*** (0.02)
<b>Background</b>							
No. of children	0.62*** (0.02)	0.62*** (0.02)	0.62*** (0.02)	0.62*** (0.02)	0.62*** (0.02)	0.62*** (0.02)	0.62*** (0.02)
Age	-0.04*** (0.00)	-0.04*** (0.00)	-0.04*** (0.00)	-0.04*** (0.00)	-0.04*** (0.00)	-0.04*** (0.00)	-0.04*** (0.00)
Education	0.01 (0.01)	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)	0.01 (0.01)	0.02 (0.01)	0.01 (0.01)
Married	-0.20*** (0.06)	-0.20*** (0.06)	-0.20*** (0.06)	-0.19*** (0.06)	-0.20*** (0.06)	-0.20*** (0.06)	-0.20*** (0.06)
Constant	2.41*** (0.09)	2.26*** (0.10)	2.31*** (0.10)	2.39*** (0.09)	2.38*** (0.09)	2.31*** (0.09)	2.32*** (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<0.05, \*\*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.

**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
<b>Belief in God</b>							
Life force	0.12*** (0.04)		0.10** (0.04)		0.11** (0.04)		0.09** (0.04)
Personal God	0.25*** (0.04)		0.19*** (0.05)		0.21*** (0.05)		0.17*** (0.04)
<b>Religiosity</b>							
Importance of religion		0.10*** (0.02)	0.06** (0.02)				
Religiousness							
Not religious (ref)	na	na	na	na	na	na	na
Religious				0.15*** (0.04)	0.06 (0.05)		
Somewhat religious				0.01 (0.05)	-0.02 (0.05)		
Church attendance						0.07*** (0.01)	0.05*** (0.01)
<b>Background</b>							
No. of children	0.63*** (0.02)	0.62*** (0.02)	0.62*** (0.02)	0.63*** (0.02)	0.63*** (0.02)	0.62*** (0.02)	0.62*** (0.02)
Age	-0.05*** (0.00)	-0.05*** (0.00)	-0.05*** (0.00)	-0.05*** (0.00)	-0.05*** (0.00)	-0.05*** (0.00)	-0.05*** (0.00)
Education	0.03* (0.01)	0.04** (0.01)	0.04** (0.01)	0.04** (0.01)	0.03* (0.01)	0.04** (0.01)	0.04** (0.01)
Married	-0.25*** (0.04)	-0.27*** (0.04)	-0.27*** (0.04)	-0.27*** (0.04)	-0.26*** (0.04)	-0.27*** (0.04)	-0.27*** (0.04)
Constant	2.84*** (0.08)	2.66*** (0.09)	2.69*** (0.09)	2.84*** (0.09)	2.81*** (0.09)	2.68*** (0.09)	2.66*** (0.09)
R <sup>2</sup>	0.29	0.29	0.30	0.29	0.30	0.29	0.30
Adjusted R <sup>2</sup>	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.

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 (World Bank)—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 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 (Dawkins 2006). 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 (Bulbulia 2010). 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 (Weeden & Kurzban 2013).

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.

## CHAPTER 3: DO THE RELIGIOUS DERIVE MORE HAPPINESS FROM HAVING CHILDREN? RELIGION AS A MODERATOR IN THE RELATIONSHIP BETWEEN HAPPINESS AND FERTILITY

### **Introduction**

Life decisions and events are framed and ordered by societally influenced schemas that help individuals make sense of events around them (Sewell 1992). One such life event affected by schemas is childbearing. The decision to become a parent does not come from a vacuum, but is influenced by group-specific norms about the desirability and roles of parenting. One institution in particular that has been shown to influence attitudes towards having children is religion. Women who self-identify as religious report higher fertility intentions and outcomes in the US (Hayford & Morgan 2008), in Spain (Neuman 2007), in the OECD countries (Frejka & Westoff 2007) and in Europe (Philipov & Berghammer 2007). Prior literature has emphasized the role of normative framing in these outcomes: “traditional religious teachings [that] advocate life in a sound traditional family with many children” (Philipov & Berghammer 2007), “the [strong] association between religion and conservative family values,” (Hayford and Morgan 2008), “the high value the Church places on family” (Adsera 2006).

The perception-modulating function of schemas helps shape what individuals derive satisfaction from. People will derive more satisfaction from something if their schemas normatively value it (Oishi et al. 1999; Diener and Suh 2003). This principle applies to religious frameworks; for example, the positive effect of religiosity on subjective well-being is much greater in countries where religiosity is normative (Stavrova, Fetchenhauer, and Schlösser 2013; Diener et al. 2011), and Lelkes (2006) finds



that in Hungary in the 1990s, the life satisfaction of the religious were less affected by the economic turmoil than that of the non-religious. This principle also applies to fertility; people who see parenthood and children as good for society tend to have a higher happiness payout from children than people who don't hold the same pronatalist views (Vanassche, Swicegood, and Matthijs 2012).

Consequently, I argue that religious frameworks have a significant part to play in the vast literature on fertility and happiness. While there are many studies that have measured simple associations between fertility and happiness, recently some have called into question this approach, arguing that ideals, perceptions, and expectations about fertility moderate this effect so strongly so as to call into question the ability of simple association-based measures to inform our understanding of the subject (Kravdal 2013). I pursue this investigation in the spirit of helping take the literature beyond simple associations and incorporating attitudes towards childbearing as heavily moderating influences in the relationship.

As religion tends to support pronatalist schemas and norms, then *ceteris paribus* the religious should have a stronger positive relationship (or less of a negative one, as the case may be) than those who are in social milieus where childbearing does not necessarily fulfill a sociocultural imperative. These effects would be substantively significant given the important role that religion plays in the lives of a majority of the human population (Diener et al.2011).

Particular religious traditions may also play a role independent of baseline religiosity, and I also investigate this possibility. In general the literature on religiosity and fertility has been moving away from denomination or tradition-specific effects and

more towards the generic effects of religiosity (Hayford and Morgan 2008, 1164). However, differences among religious traditions and denominations continue to receive some attention, particularly in a strand of research that uses religion-specific vital and switching rates to both decompose the source of past changes in sizes of respective religious groups (Hout, Greeley, and Wilde 2001), and a related literature that uses those rates to project forward in much the same manner that one would project the population of a state (e.g. Skirbekk, Kaufmann, & Goujon, 2010). However, in this literature what is important is zero-order relations between age-adjusted fertility and religious identification. For the purposes of decomposing past changes or projecting future ones, it doesn't matter why a particular religious group has higher or lower fertility, only that they do, whereas the literature concerned with why the religious have more children tends to include other covariates in order to focus on the mechanisms behind the relationship, and it is this literature that has shifted away from doctrinal particulars towards the generic effects of religiosity. In this study I include some analyses to test whether any of the effect of religion as a moderator can be plausibly attributed to religious affiliation independent of baseline religiosity.

### **Dataset and Methods**

To test my hypotheses, I will use the complete 1972-2012 cross-sectional cumulative General Social Survey dataset. The General Social Survey is a randomly selected, in-person sample of non-institutionalized adults in the United States. This dataset is especially appropriate for this purpose as the four relevant variables of fertility, fertility idealization, religiosity, and happiness have been measured nearly every year by

consistently-worded questions, allowing for a relatively large dataset that allows me to appropriately capture these effects across a variety of contexts.

### *Measures*

For religion I use the variable “reliten” that asks about the strength of the respondent’s affiliation with the religion they specified in a previous question (“Would you call yourself a strong [religious preference named in prior religion question] or a not very strong [religious preference named]”). The available responses are: strong (coded as 1 – 38% of the entire sample), not very strong (coded as 2—40.23% of the sample), and somewhat strong (coded as 3—10% of the sample), with those specifying “no religion” in the prior question coded as a 4 (11% of the sample). This simple linear variable reflects a the linear continuum from no religion at being highly religious, and has often been used in the literature as a measure of baseline religiosity (Brace et al. 2002; Hunt and Hunt 2001; Djupe 2000; Strickler and Danigelis 2002; Marsden 2012). Hereafter I reverse the coding to make the ordering more intuitive (“no religion”=1, etc.).

To measure happiness I use a simple trichotomous measure of responses to the question “Taken all together, how would you say things are these days--would you say that you are very happy (1), pretty happy (2), or not too happy (3)?” Once again I invert the coding, with the “very happy” (32% of the total sample) outweighing the “not too happy” (13% of the sample). In my analyses I employ standard OLS for ease of interpretability, although when I employ ordered logistic analysis my results do not substantively change (results available upon request).

In some years responses to the happiness question have potentially been influenced by question ordering effects. Specifically, in some years a question about

marital happiness, which has been shown to prime married respondents towards higher responses on overall happiness, preceded the general happiness question, and in some years a satisfaction scale, which has also been shown to prime people towards higher responses on overall happiness, preceded the global measure of happiness (Smith 1990). In all of my analyses I use year-fixed effects to absorb these variations and whatever other year-fixed effects may exist.

Fertility is measured by simply asking “how many children have you ever had? Please count all that were born alive at any time (including any you had from a previous marriage).” Finally, I include a measure of fertility ideals (“what do you think is the ideal number of children for a family to have?”) to capture the degree to which the respondent’s personal schemas are oriented towards childbearing, and to test the hypothesized explanatory mechanism for any interaction effect between religion and fertility found. This question, while at times controversial as a measure of pronatalism, has been shown to have construct validity for measuring societal-level (although not necessarily individual-level) pronatalism (Trent 1980). This concept in particular is especially theoretically germane to religious frameworks. Because the primary hypothesized mechanism connecting religiosity to fertility is socialization towards a high-fertility ideal (Philipov & Berghammer 2007), this high fertility ideal should be manifested in higher fertility for an ideal family.

As previously noted, I will also examine the potential role of religious tradition in these interactions. The GSS has a question asking which religious denomination the respondent affiliates with, and I use the Steensland et al. (2000) categorization scheme to assign respondents to one of seven different religious traditions: evangelical Christian,

mainline Protestant, black Protestant, Catholic, Jewish, other faith, and nonaffiliated. In prior research more liberal denominations have been shown to have less children than their more conservative counterparts (Hout, Greeley, and Wilde 2001), and some smaller religious groups such as the Mormons and Ultra-Orthodox Jews have been identified as having relatively high fertility (Kaufmann 2011).

In most models I also include standard demographic controls of age (in units of ten years) sex (a dichotomous measure for being male or not) race (black and other race, with white as the reference category) marital status (widowed, married, separated, and divorced with single as the reference category), family income (in units of \$10,000 year-2000, inflation-adjusted dollars), and years of education.

#### *Sample size and non-response*

All together, all of these questions were asked for 34 of the 39 years that the GSS was collected between 1972-2012, missing only 1972, 1973, 1980, 1984, and 1987, with a total N= 49,204. However, the question about fertility frameworks was not asked of all respondents in each wave, leaving a total N= 33,092. Item non-response (primarily because of the income measure with 3, 091 missing values, religiousness with 1,269 non mutually exclusive missing values, and 1,049 people answering “don’t know” on the fertility ideal measure) leads to a final sample size of 28,956 for the multiple regression after listwise omission.

#### **Summary statistics**

While the interaction is difficult to discern, the simple summary statistics found in Table 1 and Table 2 support what the prior literature has said about the relationship between religiosity and other variables. Specifically, the religious tend to have more

children, their abstract, ideal family is larger, and there is a slight happiness advantage to being religious. Some of the higher fertility is simply attributable to the religious being on average older and more likely to be married, but the fertility effect remains once these variables are controlled for.

Table 1: Descriptive statistics

	No religion	Somewhat strong	Not very strong	Strong
<i>Dep. variable</i>				
Happy	2.095 (0.625)	2.193 (0.618)	2.138 (0.621)	2.277 (0.643)
<i>Main ind. variables</i>				
# of children	1.272 (1.484)	1.991 (1.755)	1.851 (1.709)	2.211 (1.878)
Ideal # of children	2.742 (1.807)	3.010 (1.750)	2.739 (1.494)	3.188 (1.783)
<i>Control variables</i>				
Age (/10)	3.921 (1.526)	4.660 (1.768)	4.395 (1.680)	4.938 (1.793)
Male	0.572 (0.495)	0.425 (0.494)	0.476 (0.499)	0.360 (0.480)
Black	0.102 (0.303)	0.144 (0.351)	0.108 (0.310)	0.180 (0.384)
Other Race	0.0696 (0.255)	0.0562 (0.230)	0.0530 (0.224)	0.0421 (0.201)
Family income	4.638 (4.000)	4.544 (3.664)	4.548 (3.592)	4.341 (3.557)
Yrs of educ	13.55 (3.081)	12.76 (3.136)	12.73 (2.983)	12.73 (3.307)
Widowed	0.0377 (0.190)	0.109 (0.312)	0.0785 (0.269)	0.133 (0.339)
Divorced	0.152 (0.359)	0.121 (0.326)	0.143 (0.350)	0.109 (0.312)
Separated	0.0387 (0.193)	0.0366 (0.188)	0.0369 (0.189)	0.0313 (0.174)
Married	0.394 (0.489)	0.549 (0.498)	0.529 (0.499)	0.566 (0.496)
Observations	5946	5299	20962	19894

Means; sd in parentheses

Table 2: Average happiness by religiosity/children combination

Religiousness	Child #									Total	
	0	1	2	3	4	5	6	7	7<		
Strong	1.91 2,302	1.92 903	1.85 1,083	1.93 521	1.91 251	1.94 110	2 37	1.74 19	2.11 19	1.9 5,245	Mean N
Not very strong	1.81 1,187	1.81 778	1.78 1,261	1.79 762	1.84 380	1.89 188	1.84 88	1.96 49	1.87 77	1.81 4,770	Mean N
Somewhat strong	1.87 5,466	1.87 3,212	1.83 4,833	1.88 2,890	1.85 1,505	1.88 649	1.93 331	1.89 158	1.95 232	1.86 19,276	Mean N
No religion	1.75 4,052	1.74 2,663	1.7 4,578	1.69 3,111	1.7 1,695	1.76 841	1.69 443	1.83 282	1.76 414	1.72 18,079	Mean N
Total	1.83 13,007	1.82 7,556	1.77 11,755	1.8 7,284	1.79 3,831	1.83 1,788	1.81 899	1.86 508	1.84 742	1.81 47,370	Mean N



## Results

I conduct various empirical tests confirm that religion acts as an interacting moderator in the child/happiness relationship. Such a relationship is logical given the results of Table 3, which shows a significant relationship between fertility ideals and religiousness (Model 1), and between the fertility ideal/fertility interaction and happiness (Model 3). Model 1's results simply confirm what has been found in prior literature (Hayford and Morgan 2008): that religious people tend to be more pronatalist. Model 2's results simply confirm the intuitive moderating effect that pronatalist norms have on the happiness/children relationship (people who value having children more will have more happiness associated with their having children than people who value having children less) which, while not emphasized in the prior empirical literature, has potential in future literature to help predict variation in the effect of children on happiness. These two interactions theoretically support the case that religiosity (at least in the US context) acts as a moderator in the children/happiness relationship.

While country-level variables and other mediating factors may moderate the size of or even change the direction of the happiness/children relationship (Margolis and Myrskylä 2011), in the GSS the relationship between child number and happiness appears to be negative (Table 3, Model 2), with more children associated with less happiness; however, there is (understandably) a strong interaction here between ideal number of children in a family and the children/happiness relationship (Table 3, Model 3), with those who have a higher ideal family size having less of a negative association between children and happiness than those who have a lower ideal family size.

Table 3: Child idealization, religiosity and happiness/children effects; OLS

	Model 1 Child ideal	Model 2 Happiness	Model 3 Happiness
Religiousness	0.105*** (0.010)	0.051*** (0.003)	0.054*** (0.004)
# children	0.157*** (0.006)	-0.004* (0.002)	-0.023*** (0.004)
Age (/10)	-0.174*** (0.035)	-0.128*** (0.011)	-0.120*** (0.013)
Age (/10) <sup>2</sup>	0.021*** (0.004)	0.015*** (0.001)	0.014*** (0.001)
Male	0.021 (0.019)	-0.040*** (0.006)	-0.042*** (0.007)
Black	0.404*** (0.030)	-0.120*** (0.009)	-0.114*** (0.011)
Other race	0.133** (0.047)	-0.029* (0.014)	-0.016 (0.018)
Family income	0.000 (0.003)	0.020*** (0.001)	0.019*** (0.001)
Years of education	-0.004 (0.004)	0.013*** (0.001)	0.013*** (0.001)
Widowed	-0.113* (0.047)	-0.089*** (0.014)	-0.094*** (0.018)
Divorced	-0.323*** (0.037)	-0.043*** (0.011)	-0.031* (0.014)
Separated	-0.294*** (0.056)	-0.126*** (0.018)	-0.126*** (0.021)
Married	-0.239*** (0.030)	0.208*** (0.009)	0.203*** (0.011)
Ideal # of children			0.004 (0.003)
Child x ideal # Children			0.005*** (0.001)
Constant	2.961*** (0.106)	1.984*** (0.034)	1.945*** (0.040)
Observations	29076	42619	28956
R <sup>2</sup>	0.055	0.093	0.091
Adjusted R <sup>2</sup>	0.054	0.092	0.089
F	38.738	93.223	62.706
Prob>F	0.000	0.000	0.000

Standard errors in parentheses

Region-fixed effects controlled for in every model  
+  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

The addition of religiosity to the model empirically confirms this. The interaction terms for religion and child number are significant in both the OLS (Table 4) and ordered logistic models (not shown), indicating that for these models and this sample, the negative association between children and happiness is dampened for the religious.

Table 4: Child/happiness with religion interaction effect; OLS

	Model 1	Model 2	Model 3	Model 4
Religiousness	0.058*** (0.003)	0.051*** (0.003)	0.037*** (0.004)	0.043*** (0.005)
# of children	-0.001 (0.002)	-0.004* (0.002)	-0.031*** (0.006)	-0.042*** (0.008)
Ideal # of children				0.004 (0.003)
Child ideal x # Children				0.004*** (0.001)
Religiousness x # Children			0.008*** (0.002)	0.006** (0.002)
Age (/10)		-0.128*** (0.011)	-0.126*** (0.011)	-0.119*** (0.013)
Age <sup>2</sup> (/10)		0.015*** (0.001)	0.015*** (0.001)	0.014*** (0.001)
Male		-0.040*** (0.006)	-0.040*** (0.006)	-0.042*** (0.007)
Black		-0.120*** (0.009)	-0.120*** (0.009)	-0.114*** (0.011)
Other race		-0.029* (0.014)	-0.029* (0.014)	-0.016 (0.018)
Family income		0.020*** (0.001)	0.020*** (0.001)	0.019*** (0.001)
Years of education		0.013*** (0.001)	0.012*** (0.001)	0.013*** (0.001)
Widowed		-0.089*** (0.014)	-0.087*** (0.014)	-0.091*** (0.018)
Divorced		-0.043*** (0.011)	-0.039*** (0.012)	-0.028* (0.014)
Separated		-0.126*** (0.018)	-0.122*** (0.018)	-0.123*** (0.021)
Married		0.208*** (0.009)	0.211*** (0.009)	0.206*** (0.011)
Constant	2.068*** (0.019)	1.984*** (0.034)	2.022*** (0.035)	1.973*** (0.042)
Observations	47370	42619	42619	28956
R <sup>2</sup>	0.010	0.093	0.094	0.091
Adjusted R <sup>2</sup>	0.010	0.092	0.093	0.090
F	17.495	93.223	91.765	61.568
Prob>F	0.000	0.000	0.000	0.000

Standard errors in parentheses

Region-fixed effects controlled for in every model  
+  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Figure 1 shows the predictive margins with 95% confidence intervals for each of the separate levels of religiosity with the same model specification in Table 4, Model 2, except that religion and children values treated as categorical and not continuous. The difference in slope is perhaps more apparent in Figure 2, which uses parental status instead of number of children, and shows the transition to being a parent by level of religiosity. Finally, Figure 3 plots the coefficients for children when Table 4, Model 2 is separated out by level of religiosity (as reported in Table 5), starkly demonstrating the distinctions between the two most religious categories and the two least religious categories. Child number for the religious is not statistically significantly related to happiness, unlike the other categories where there's a negative effect, albeit to different magnitudes.

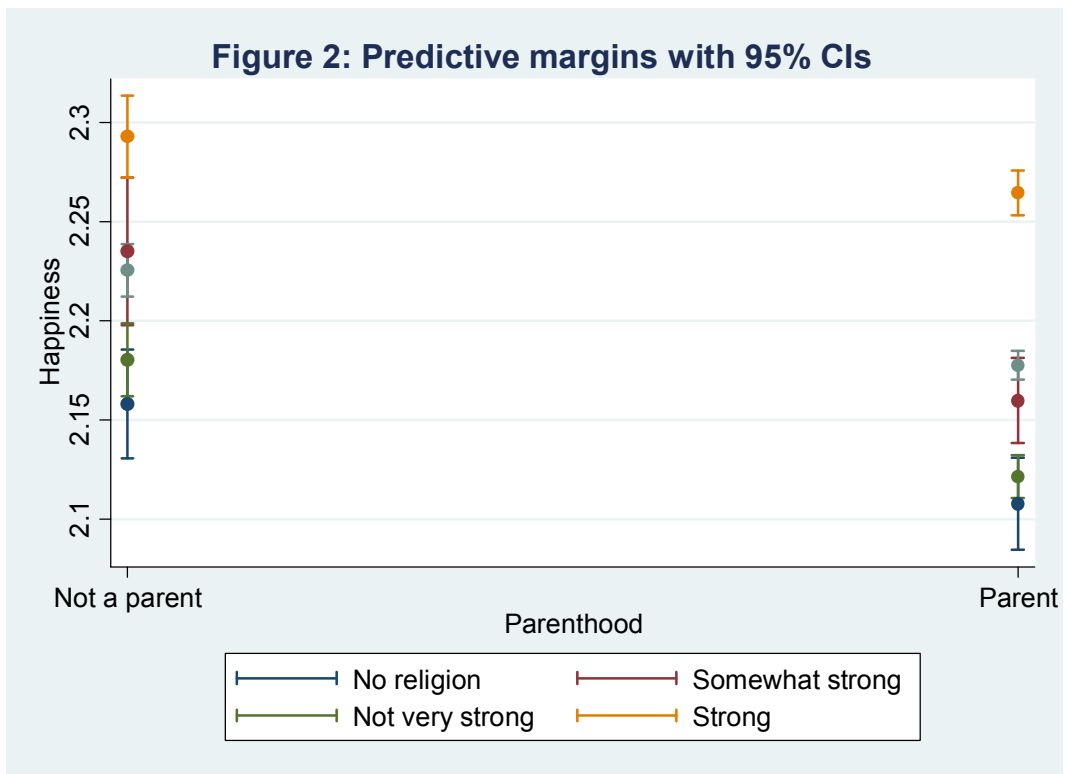
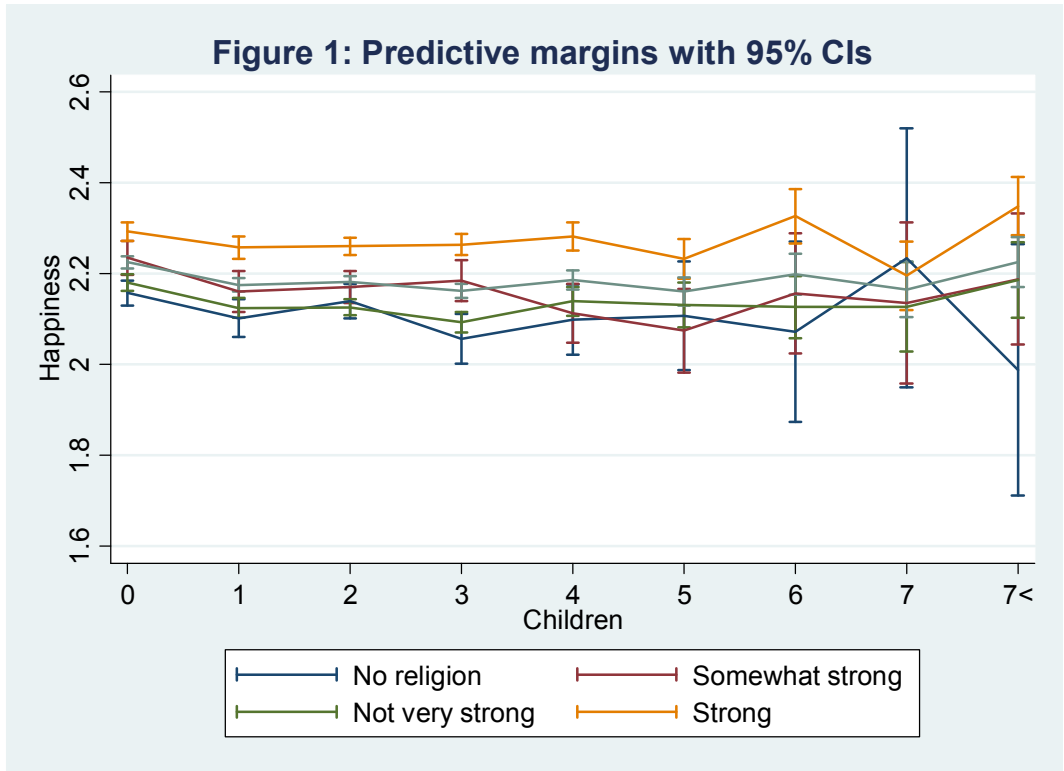
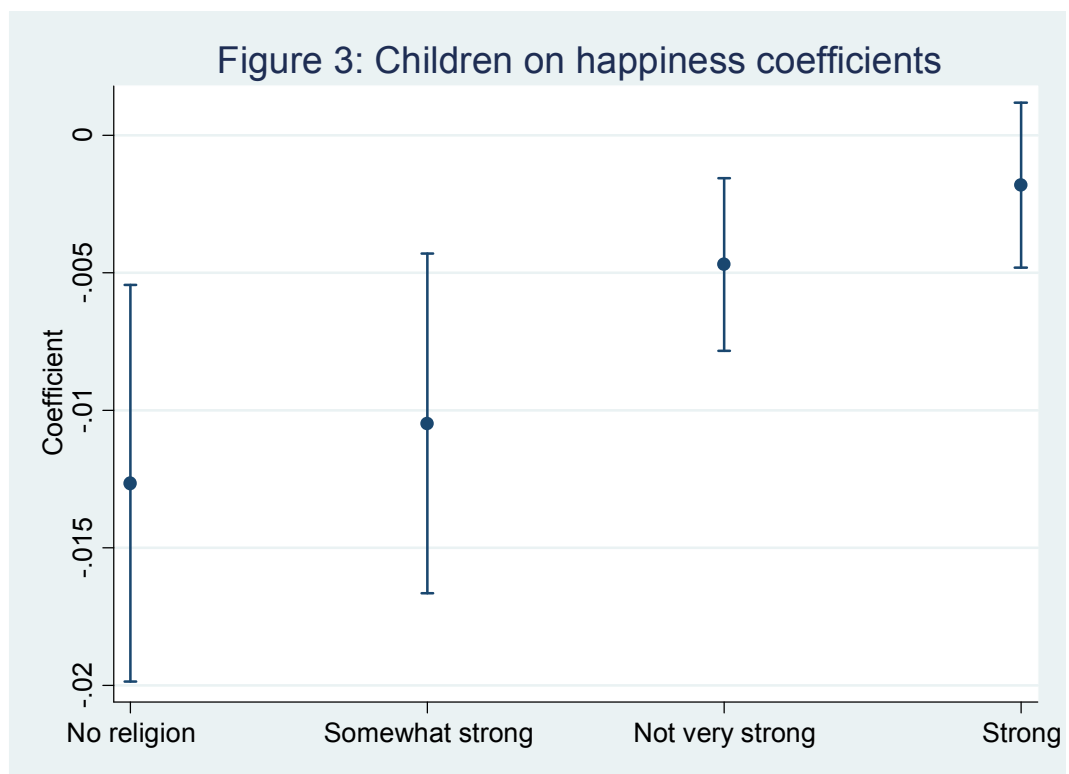


Table 5: Coefficients by religiosity

	Coef	SE
No religion	-0.0127	0.0072
Somewhat strong	-0.0105	0.0062
Not very strong	-0.0047	0.0031
Strong	-0.0018	0.003



The inclusion of an ideal fertility/fertility interaction (Model 4, Table 4) reduces the overall size of the religion/fertility interaction coefficient, supporting the hypothesis that the child/religion interaction effect operates via pronatalist frameworks. However, most of the effect still remains significant and unexplained even after the inclusion of the

interaction term. More formally, calculating the indirect effect coefficient by performing a seemingly unrelated regression and path analysis version of Model 4 while nesting the religion/fertility interaction as a predictor of the ideal family size/fertility interaction (results not shown) yields an indirect effect coefficient of .004, with a direct effect coefficient of .006; 40% of the total association between the religiosity/fertility interaction effect and happiness is vectored directly through the pronatalism/fertility interaction effect as measured by higher ideal family size. In other words, 40% of the benefit the religious have in the relationship between child number and happiness is directly attributable to the fact that the religious have higher ideal family sizes, and in general those with higher ideal family size derive more happiness from child number than those with lower ideal family sizes.

The remainder of the effect could be due to more individual-level fertility norms that don't operate through socially-influenced perceptions about ideal family size. However, the literature on distinct types and measures of pronatalism is very sparse, and a psychometrically rigorous dissection of pronatalism as a psychological concept into possibly distinct factors, while sorely needed for the fertility intentions literature, is currently not available. Consequently, while it is plausible that the effect of the religiosity/fertility interaction that is not mediated through the fertility idea/fertility interaction is due to the interaction between fertility and a category of pronatalism not captured by the ideal family measure, without a more developed literature in the area it's difficult to even speculate about what that might be.

While here I pool data from a wide range of years, the interaction coefficients retain their positive direction when I conduct these analyses in separate ten-year intervals.



Specifically, the coefficient for the religiosity/children interaction in the Table 5, Model 4 is .008 from 1973-1982, .003 from 1983-1992, .003 from 1993-2002, and .009 from 2003-2012. The respective coefficients for the ideal number of children/children interaction in the same model are .009, .002, .002, and .004. When these coefficients are tested against each other by pooling them in a full model and interacting them with respective ten-year increment dummies (with the most recent decade as the omitted reference category), none of the three-way interactions are significant (results available upon request), suggesting that, while the averages of these values have undoubtedly changed over the time period used, the interrelationships between these variables have not changed enough to threaten the validity of my pooled model.

If the results are not significantly altered by the time component, it raises the question of why the pooled data is being used at all, and why the sample isn't restricted to only the most recent years. Because interaction terms are closely related to their component variables, their inclusion in a model hazards multicollinearity (Sasaki and Smith 1979). In my final model I include two interactions, both of which are interacting with the same variable, making the specter of multicollinearity especially problematic. This is confirmed by a simple VIF test for the full model, which shows a variance inflation factor of 16.6 for the children variable, and a VIF of 15.27 for the child/religiosity interaction. Both of these values are above the commonly-used benchmark of 10, but not by much, and high VIF levels are tolerable if accompanied by relatively high N-values (O'Brien 2007). Consequently, I use the complete set of extant GSS data in order to most effectively draw out the relationships between both interaction terms used in my model. It is worth noting that when I run the full model using the most

recent decade of data, the positive religiosity/fertility interaction is still statistically significant at the .05 level. However, the main theoretical mechanism underlying the relationship: the interaction between higher ideal family size and number of children falls into insignificance when the N-value is lowered from truncating the chronological range of the data.

### **The Role of Religious Traditions**

Given the hypothetical chain of mechanisms delineated above, for religious tradition to also matter it would need to have an independent effect on fertility or pronatalism once baseline religiosity is controlled for. While some religious groups have higher fertility than other groups, it is not clear if this is due to higher overall religiosity in those groups, or due to a “particularistic theology” or social characteristics (Goldscheider 1971) about childbearing that are independent of baseline level of religiosity. Table 6 shows clear tradition-specific patterns for both number of children (Models 1 and 2) and ideal family size (Models 5 & 6) when differences between different traditions and nonaffiliation are measured, both with and without socio-demographic controls. However, once religiosity is included in the respective models (Model 3 and Model 7), all of the differences go away with the exception of Catholic and, in the case of fertility, “other faith.” Initially, this may seem to provide a surprising update to the classic finding that Catholics used to have higher fertility than their Protestant counterparts (Westoff & Jones 1974). However, this effect appears to be due to the higher fertility and fertility intentions of Hispanics. Unfortunately, the GSS has only had a measure for Hispanic status since 2000, so included Hispanic as a covariate reduces the number of years used, only selecting from the higher ranges. However, Model 4

demonstrates that the higher Catholic fertility goes away once Hispanic status is controlled for. In a sense this is not surprising as Hispanics generally have higher fertility (although this is arguable, see Parrado 2011). Interestingly, they do not appear to have a higher number of ideal children in Model 8, despite the finding of the previous literature that Hispanics tend to score higher than average on different measures potentially related to pronatalism such as perceived value of children and familism (“a collective orientation in which family roles and obligations are highly valued and the well-being of the family group takes precedence over the interests of each of its members,” Parrado & Hartnett 2012, 637).

Ultimately, the final models in Table 6 both indicate that no particular religious tradition shows a statistically significant difference with those indicating no religious affiliation once baseline religiosity is controlled for, and only one (black Protestant) shows a significant relationship (albeit negative) with ideal child number. This last finding is rather idiosyncratic theoretically, and does not survive a simple Bonferroni correction, suggesting that this result may have arisen out of chance from running multiple comparisons at once.

Table 6: Fertility and religious tradition

	Model 1 Children	Model 2 Children	Model 3 Children	Model 4 Children	Model 5 Child ideal	Model 6 Child ideal	Model 7 Child ideal	Model 8 Child ideal
<i>Religious Tradition</i>								
Evangelical	0.483*** (0.026)	0.186*** (0.026)	0.025 (0.040)	-0.041 (0.063)	0.127*** (0.035)	0.136*** (0.037)	-0.294*** (0.057)	-0.045 (0.118)
Catholic	0.430*** (0.026)	0.267*** (0.025)	0.119** (0.039)	0.033 (0.060)	0.277*** (0.034)	0.288*** (0.036)	-0.131* (0.055)	-0.032 (0.111)
Mainline	0.127* (0.058)	0.065 (0.057)	-0.066 (0.065)	-0.078 (0.120)	0.005 (0.075)	0.022 (0.077)	-0.385*** (0.090)	-0.110 (0.230)
Black Protestant	0.845*** (0.032)	0.196*** (0.043)	0.058 (0.053)	0.006 (0.082)	0.563*** (0.042)	0.030 (0.060)	-0.409*** (0.075)	-0.375* (0.150)
Jewish	-0.187*** (0.053)	0.027 (0.054)	-0.094 (0.064)	-0.160 (0.102)	0.122+ (0.070)	0.198** (0.075)	-0.214* (0.088)	-0.158 (0.191)
Other faith	0.409*** (0.037)	0.270*** (0.037)	0.136** (0.050)	0.059 (0.078)	0.370*** (0.051)	0.347*** (0.053)	-0.040 (0.071)	0.056 (0.146)
Non-affiliated	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
<i>Control variables</i>								
Age (/10)	1.486*** (0.025)	1.130*** (0.028)	1.109*** (0.029)	0.551*** (0.045)	-0.049 (0.034)	0.056 (0.040)	0.035 (0.041)	-0.117 (0.083)
Age2	-0.111*** (0.003)	-0.090*** (0.003)	-0.088*** (0.003)	-0.029*** (0.005)	0.016*** (0.003)	0.004 (0.004)	0.005 (0.004)	0.015+ (0.008)
Male		-0.180*** (0.016)	-0.171*** (0.016)	-0.147*** (0.025)		0.007 (0.022)	0.022 (0.023)	-0.067 (0.047)
Black		0.524*** (0.034)	0.522*** (0.035)	0.548*** (0.051)		0.593*** (0.048)	0.563*** (0.049)	0.572*** (0.091)
Other race		0.250*** (0.035)	0.266*** (0.035)	0.195*** (0.049)		0.114* (0.051)	0.111* (0.052)	0.054 (0.088)
Family income		-0.008** (0.003)	-0.008** (0.003)	-0.007* (0.004)		-0.002 (0.004)	-0.002 (0.004)	0.008 (0.006)
Years of education		-0.100*** (0.003)	-0.101*** (0.003)	-0.101*** (0.005)		-0.020*** (0.004)	-0.018*** (0.004)	-0.011 (0.008)
Widowed		1.263*** (0.038)	1.238*** (0.039)	1.272*** (0.063)		0.054 (0.054)	0.066 (0.055)	0.167 (0.115)
Divorced		0.951*** (0.030)	0.945*** (0.030)	0.895*** (0.044)		-0.211*** (0.042)	-0.190*** (0.043)	-0.161* (0.081)
Separated		1.387*** (0.044)	1.368*** (0.045)	1.290*** (0.071)		-0.127* (0.061)	-0.094 (0.063)	-0.127 (0.128)

Married	1.316*** (0.023)	1.296*** (0.024)	1.240*** (0.036)		-0.034 (0.032)	-0.033 (0.033)	0.004 (0.065)	
Religiousness		0.065*** (0.013)	0.102*** (0.021)			0.187*** (0.018)	0.153*** (0.040)	
Hispanic			0.201*** (0.047)				0.005 (0.085)	
Constant	-2.169*** (0.077)	-0.835*** (0.090)	-0.675*** (0.093)	0.170 (0.134)	2.923*** (0.094)	2.895*** (0.119)	2.737*** (0.123)	2.746*** (0.242)
Observations	43745	39270	36333	12912	26775	24116	22480	6417
$R^2$	0.203	0.309	0.312	0.313	0.028	0.041	0.042	0.028
Adjusted $R^2$	0.203	0.308	0.311	0.311	0.027	0.039	0.040	0.023
F	309.809	330.424	316.739	177.536	24.062	20.827	20.213	5.532
Prob>F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses

Region-fixed effects controlled for in every model

+  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Replacing the religiosity interactions in Table 4 for distinct religious tradition interactions in the models yield null relationships between all but one religious tradition interactions and happiness (results available upon request). Once again, the one exception (“other faith”) is barely significant (to the .045 level), and becomes insignificant once the results are adjusted for multiple comparisons. While religious traditions do exhibit distinct fertility patterns, these patterns appear to be attributable to other factors, namely, baseline religiosity. As previously noted, some of the smaller religious groups such as Mormons and Ultra-Orthodox Jews may have particularistic characteristics that emphasize childbearing above and beyond the effects of baseline religiosity, but ultimately they are not captured by the Steensland et al. (2000) system used here, and are difficult to test directly due to their smaller numbers.

While not the central emphasis of this paper, my findings suggest that conservative Protestants have more children because they are more religious than mainline Protestants. While in theory the higher religiosity in these traditions should cause a significant interaction effect if religiosity is omitted from the model and

religious tradition is included in its place, in practice the connections are not direct enough to make the traditions significant on their own when the noise from six interactions are simultaneously included in the model.

### **Conclusion**

The moderating role of religion in the children/happiness connection is conceptually simple. What we derive happiness from is in large part determined by what our surroundings tell us is valuable. Religious communities and frameworks tend to highly regard childbearing and rearing, and their ideal family sizes are higher; therefore, all other things being equal, people who are more religious will have a more positive (or less negative) association between children and happiness than people who are not religious. My analysis validates this hypothesis, showing significant positive interactions between religion and fertility in models predicting happiness.

The inclusion of an additional interaction term measuring ideal family size reduces the size of the religiosity/fertility interaction, suggesting that some of this effect is directly attributable to higher fertility ideals, but much of the effect remains even after this control is included. It is worth noting that this effect theoretically could go both ways, and religious individuals who have no or few children could also be more negatively affected due to social disapprobation from being even further away from the ideal family size than their secular counterparts are to theirs. Further investigating the theoretically causal chain running from socially-informed schemas to fertility attitudes to fertility/well-being associations is a potentially fruitful area for future research.

## CONCLUSION

Each of my three dissertation chapters has succeeded in uncovering a theoretically important association. The chapters have been thematically eclectic in order to attempt to draw out new perspectives on these questions. Like social psychology more formally, they have incorporated some of the language and approaches of psychology as a discipline while invoking social themes. For example, chapter 1 invokes Terror Management Theory, chapter 2 briefly touches on evolutionary psychological explanations, and chapter 3 directly addresses the moderating role of context-specific norms in a positive psychological context. While social psychological themes are invoked, the methods and data utilized in all three chapters (specifically, large-N survey data with single-item measures) tend to be those more often used in the sociology literature than in the psychology literature that tends to rely more on convenience sampling but employs experimental techniques or more precise, multi-item measures.

Consequently, while themes and explanations invoked in the psychological literature are included in my discussion and explanations, ultimately the methods involved make me unable to directly test some of these suppositions. A common big-picture theme of all three chapters is that I find some preliminary but important evidence that themes traditionally treated in the psychological literature may have important roles to play in these questions. While I rely on single-item sampling, I lack the precision in each case to rigorously drill down into the relationship that is hinted at, but the preliminary evidence itself makes the contribution relevant and important. In each case this inability to rigorously pin down some of the particulars represents both the limitation of these studies and directions for future ones. In chapter 1, I generally find that those

who believe in God are more likely to indicate that they strongly disagree with the nihilistic statement. There are a variety of possible reasons for why this might be, and I speculate about a number of them, but ultimately I can't construct some conceptual map based on refined, construct-validated measures in order to test them, and the nature of the variable prevents experimental research since one can't randomly assign people metaphysical beliefs. Nonetheless, the general finding that people who belief in God are more likely to strongly disagree with the statement is a theoretically important and interesting one.

Similarly, in chapter 2 I find that people who believe in God report higher fertility intentions than people who do not. Once again, the specifics behind this relationship can't be confirmed experimentally, and the survey did not include enough refined measures for me to test specifics about why this is, but the general finding has theoretical implications for the literature that has traditionally relied on denomination or tradition-specific characteristics. Again, this is not to say that belief in God is not socially or religiously influenced, just that there is a potential space now for the role of cognitive variables that may help explain the patterns found in the literature, although the findings are not sufficient enough to confirm that it is indeed cognitive variables that are operating in the association between belief in God and fertility intentions. Again, cognitive variables are "psychological" more than "sociological" in that they are traditionally addressed more by psychologists, but this doesn't mean that they aren't in some cases fundamentally social in nature as well.

Finally, more than the other two chapters, chapter 3 does attempt to test the presence and associations with specific plausible mechanisms. Specifically, I use a



general measure of pronatalism to test how much of the interaction between religiosity and fertility intentions are due to pronatalism. Once again, however, pronatalism as a concept has not been rigorously defined, operationalized, and treated, so the single-item measure I use is limited in its ability to comprehensively capture the concept. What is most relevant is that I find that a not-insignificant portion of the moderating effect of religiosity and the children/happiness relationship is due to pronatalist norms. Once again, I find evidence for the role of a variable (pronatalism) that could be fruitfully addressed using the techniques, perspective, and language of psychology as a discipline, but the methods and measures I use are not precise enough to get into the psychological specifics of this relationship.

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