



# Beyond America: Cross-national Context and the Impact of Religious Versus Secular Organizational Membership on Self-rated Health

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## Abstract

Studies using data from the United States suggest religious organizational involvement is more beneficial for health than secular organizational involvement. Extending beyond the United States, we assess the relative impacts of religious and secular organizational involvement on self-rated health cross-nationally, accounting for national-level religious context. Analyses of data from 33 predominantly Christian countries from the 2005–2008 World Values Survey reveal that active membership in religious organizations is positively associated with self-rated health. This association's magnitude is higher than the magnitude of associations between many memberships in secular organizations and health. The positive association between involvement in religious organization and self-rated health is moderated by national levels of religious pluralism such that positive associations are primarily found in nations high in religious diversity. These results replicated in a sample of 21 majority-Christian nations from the 2010–2014 World Values Survey.

## Keywords

religion, self-rated health, cross-national contexts, organizational membership, religious diversity

## Introduction

Over a century ago, Émile Durkheim ([1897] 1951) provided a powerful example of how the breakdown of social connections impacts health by noting the link between diminished social integration and an increase in suicides. Subsequent research has confirmed social involvement's important direct associations with mental and physical health as well as its salubrious indirect role in buffering stress and alleviating anxiety (Cohen, Gottlieb, and Underwood 2000). Conversely, social disconnection, which limits access to information and instrumental and emotional support, is positively associated with unhealthy behaviors, including physical inactivity, tobacco use, and alcohol abuse (Berkman et al. 2000; Kawachi, Kennedy, and Glass 1999). Moreover, lack of social integration—whether framed in terms of participation in volunteering or receipt of social support via informal social relationships or structured networks—is associated with increased mortality from numerous causes (Ayalon 2008; Berkman 1995; Cohen et al. 2000; House, Landis, and Umberson 1988). As House (2001:273) concludes, “[t]he magnitude of risk associated with social isolation is comparable with that of cigarette smoking and other major biomedical and psychosocial risk factors.”

As facilitators of social integration, organizations have the potential to bolster health (e.g., Hamzat and Seyi-Adeyemo 2008; Lum and Lightfoot 2005). However, the extent to which organizations are associated with health benefits may vary by organizational type. Available evidence suggests that involvement in religious organizations may yield larger effects on health than involvement in secular organizations (Curtis, Baer, and Grabb 2001; Cutler 1976; Krause 2006; Musick and Wilson 2003). This work has been based primarily on data collected in the United States, which is unusually religious compared to other Western industrialized nations and might represent an anomalous case (Bader and Finke 2010; Curtis et al. 2001; Pascoe et al. 2015). Thus, it remains unclear whether the apparent health benefits of religious over secular involvement persist across multiple country contexts. If differences exist, it becomes important

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to identify which mechanisms account for the variation in effects. Using data from Wave 5 of the World Values Survey, this study examines the relative associations of religious and secular organizational involvement with self-rated health in 33 predominantly Christian countries. It also assesses whether observed differences can be explained by two features of national religious contexts: average levels of religiosity and levels of religious pluralism. The robustness of findings is assessed by replicating analyses using data from Wave 6 of the World Values Survey.<sup>1</sup>

## Review of the Literature

### *Involvement in Religious Organizations and Health*

Organizational involvement—whether taking place in churches, clubs, recreational groups, or support groups—is positively associated with a variety of desirable physical and mental health outcomes (Ellison 1991; Greenfield and Marks 2004; Hamzat and Seyi-Adeyemo 2008; Lum and Lightfoot 2005). People who participate in organizations experience greater self-esteem and well-being (Gecas and Burke 1995) and have fewer depressive symptoms (Rietschlin 1998). Additionally, they tend to be happier and more satisfied with their lives and rate their health higher than their peers who do not participate in organizations (Ellison 1991). While it is not yet clear which organizational features produce these effects, the benefits found likely stem from the fact that *any type* of organizational involvement should be linked with enhanced social support.

However, religious organizations may be uniquely situated to improve health. A major reason for this is that religious participation might be especially efficacious in providing social support (Krause 2008). This support can be both actual—such as material assistance or guidelines regarding how to enact important social roles that can reduce stress (Chang, Noonan, and Tennstedt 1998; Horwitz and Reinhard 1995)—or anticipated support, a belief that assistance will be available from religious organizations if needed at some point in the future (Krause 2006). As in other groups, this can create a sense of belonging for members (Haslam et al. 2009). Religious involvement can also provide benefits associated with adopting a religious worldview, such as a sense of direction and meaning (Pargament 1997). While both social support and a sense of purpose can be beneficial,

the combination of the two in “communities of faith” appears to foster the greatest well-being (Lim and Putnam 2010). Thus, religious involvement might yield greater health benefits than those experienced by members of other groups (Ysseldyk, Matheson, and Anisman 2011).

Along the same lines, other scholars have argued that religious organizations serve as “therapeutic communities” that assist their members with prevention strategies to avoid mental and physical health problems and advocate for a variety of health-related behavioral and social changes (e.g., Chatters 2000:352; Ellison and George 1994). Furthermore, religious organizations instill values and orientations, such as social responsibility and support for community service, which may spur their members on to healthier practices (Chatters 2000). Insofar as these views and practices are sustained by a belief that they are encouraged or mandated by a higher power (i.e., “imbued with the mantle of religious authority”), their influence may be particularly powerful (Krause 2006:S36).

Whatever the reason, existing evidence indicates that those who attend religious services tend to participate in healthier practices, such as being more likely to quit smoking (Koenig et al. 1998; Strawbridge et al. 1997), refrain from drug and alcohol use (Brown et al. 2001), eat healthily (McIntosh and Shifflett 1984), and exercise (Kim and Sobal 2004). There is also some evidence that religious individuals are more likely to engage in preventive health behaviors, such as getting a regular mammogram, going for routine cholesterol screenings, obtaining yearly flu shots, and complying with medical advice (Benjamins 2006; Benjamins and Brown 2004; Benjamins, Trinatopoli, and Ellison 2006; Hill and Cobb 2011). Although there may be selection effects involved, social participation with people practicing healthy behaviors can provide role models and encouragement or generate social norms that motivate healthier behavior.

Existing evidence is consistent with the claim that religious organizations confer greater health benefits than secular organizations. Multiple studies report a significant positive relationship between religious organizational involvement and health and the absence of a relationship between secular organizational involvement and health (e.g., Cutler 1976; Krause 2006). For example, Curtis et al. (2001) found that membership in religious organizations improved psychological well-being, whereas membership in other voluntary associations did not. Similarly, Krause (2006) found that unlike secular emotional support, support from fellow church members offsets the relationship between financial strain and self-rated health. Given the benefits of secular organizational involvement found in other studies, these results may reflect patterns that are unique to particular outcomes or groups of people. Indeed, Musick and Wilson (2003) found that both religious and secular involvement predicted better health, but religious effects exceeded secular effects in magnitude. According to Lim and Putnam (2010:920), “[e]ven among respondents with a similar number of close friends . . . people

<sup>1</sup>We use Wave 6 as a robustness check rather than a component of our primary analyses for two reasons. First, it allowed us to develop our models using Wave 5 data without knowledge of the patterns found in Wave 6, making the Wave 6 analyses a true replication. Second, Wave 6 contains fewer eligible countries than Wave 5 (21 vs. 33), which makes conclusions drawn from these data more tenuous and thus better suited for a validity check rather than the primary evidence used to support our claims.

who have more close friends in their congregations tend to be more satisfied with their lives,” suggesting again that religious involvement may be uniquely beneficial.

Given this research, we hypothesize that:

*Hypothesis 1a:* Religious organizational involvement will be significantly and positively associated with self-rated health cross-nationally.

*Hypothesis 1b:* The magnitude of the association between religious organizational involvement and self-rated health will be greater than the magnitude of the association between secular organizational involvement and self-rated health cross-nationally.

### *The Role of National-level Context*

As Macintyre, Ellaway, and Cummins (2002) note, once individual factors are controlled, context is often treated as a “black box” used to account for remaining variability in health. Due to the U.S.-centric nature of research on religious organizational involvement and health, we cannot rule out the possibility that the observed effects are unique to the United States. The United States could represent an outlier; many Americans see their country as blessed by God and set apart as an example to a world steadily moving toward secularization (Paul 2005). Among Western nations in particular, the United States is considered exceptionally religious (e.g., Bader and Finke 2010). Religious participation was the primary reason why more Americans belonged to at least one voluntary organization than inhabitants of any of the other 15 countries in one study (Curtis et al. 2001). Yet, it is also possible that the link between religion and health found in the United States is tied to features of the American context that can also be found in other nations, suggesting that the comparative advantage of religious over secular involvement might exist elsewhere. Previous theory and research identify two features that might explain the effectiveness of religious organizations in promoting health: national levels of religiosity and religious pluralism.

### *National-level Religiosity*

Stark (1996:164) argued that religion is primarily a “group property.” Therefore, researchers considering the impact of religious involvement on a given outcome should assess whether their respondents’ religious involvement is ratified by the social environment. Ratifying social environments are “those where religiosity is both a common and socially desirable characteristic” (Stavrova, Fetchenhauer, and Schlosser 2013:92).

Several recent studies have tested this proposition with cross-national data to capture contextual factors in the religion/well-being relationship. Using data from the World Values Survey, Okulicz-Kozaryn (2010) found that

individually religious people report more life satisfaction in nations with higher mean levels of religiosity (as measured by national means of both individual and social features of religiosity). Other studies have likewise found that high individual religiousness is more strongly associated with benefits to subjective well-being in contexts where the societal level of religiosity is also high (Diener, Tay, and Myers 2011; Hayward and Elliott 2014).

The evidence with regard to physical health outcomes is more mixed. Huijts and Kraaykamp (2011) find no amplification effect from highly religious contexts in their study of the relationship between religious involvement and self-assessed health in 28 European countries. However, Europe is relatively secular, which restricts variation in religiosity; 2004 Gallup data collected around the same time as the fifth wave of the World Values Survey used in the current study indicate that in only nine European Union countries do at least a fifth of adults participate once a week in institutionalized religious activities (Manchin 2004). In addition, Ruiter and Van Tubergen (2009) found a negative association across 22 European populations between religious service attendance and self-rated health. National level of religiosity may moderate the relationship between religious organizational involvement and self-rated health when the samples for analysis include respondents from a broader array of countries. A more recent study seems to support this claim. Using data from 59 nations, including those in Africa, Europe, and North America, Stavrova (2015) found that the association between individual religiosity and self-rated health was more pronounced in countries with greater religiosity.<sup>2</sup>

Considered as a whole, this body of evidence suggests that religious activity has a more pronounced impact on physical and emotional well-being when individuals are located in highly religious contexts. According to Hayward and Elliott (2014:39), “[o]ptimum conditions for experiencing the potential health benefits of religion appear to exist in countries . . . where religious freedom is celebrated and levels of religious practice are quite high.”

*Hypothesis 2:* Religious organizational involvement will have a stronger positive association with self-rated health in countries with a higher national level of religiosity.

<sup>2</sup>Religiosity in this study was measured by a country’s average religiosity scale, comprised of frequency of church attendance, importance of religion, importance of God, self-identification as a “religious person,” the percentage of respondents in the country who believed religion should be taught in the home, and the average agreement in a country with the statement, “Politicians who don’t believe in God are unfit for public service.”



## Degree of Religious Pluralism

Association with people of similar backgrounds frequently yields more psychological benefits than association with persons whose backgrounds differ from one's own (Lin, Woelfel, and Light 1985; Rosenberg 1962). Thus, religious persons in religiously homogeneous contexts may enjoy greater psychological benefits than individuals in religiously diverse contexts. Given that people are more likely to form social attachments when they share values and interests (McPherson, Smith-Lovin, and Brashears 2006), co-religionists in a more religiously homogeneous context may have a greater sense of social integration (Ellison, Burr, and McCall 1997). This is consistent with Ellison and colleagues' (1997) finding that religious homogeneity magnifies the inverse association between religious involvement and suicide rates. Similarly, Protestants enjoy an advantage over Catholics in several areas of health, but this is moderated by the national affiliational context (Abbotts et al. 1997; Huijts and Kraaykamp 2011). Huijts and Kraaykamp (2011), for instance, found that Protestants enjoyed more of a health advantage when the percentage of Protestants in a country was higher and less of an advantage when the percentage of Catholics in a country was higher.

At first glance, shared religious heritages and state-sponsored religions seem the most obvious forces promoting religious homogeneity. However, it is also possible for religious heterogeneity in a nation to foster homogeneity by prompting social integration at the local level. Berger (1967) and other rational choice theorists of religion suggest that churches have shifted from assuming congregational loyalty to marketing themselves to potential congregants. In this view, religion is both a commodity and object of purposeful choice (Iannaccone 1991:158). Finke and Stark (1998) argue that rising religious pluralism has led to more religious choices and competition between religious groups for congregants. Competition in turn fosters higher levels of individual religiosity (Draper, Froese, and Smith 2014) as the individual becomes aware of religious competition and considers offers from a number of different religious groups. Religious persons, amid a series of competing options, can fortify their faith by finding the religious group that best suits their spiritual needs. Thus, religious pluralism may increase homogeneity by allowing individuals to self-select into religious organizations that closely match their preferences. This form of localized homogeneity also avoids the difficulties that might arise from widespread nominal homogeneity that could obscure real differences in religious needs. One study, for instance, found that in highly Catholic countries, religiously uninvolved non-Catholics had better health (May and Smilde 2016).

This framework predicts that religious involvement will have stronger beneficial effects on health in contexts high in religious pluralism. Pluralism makes it possible to self-select into homogeneous religious groups, which in turn

may provide health benefits. In other words, religious heterogeneity at the national level may confer all of the health advantages of homogeneity through the sorting of religious adherents into increasingly specialized religious groups. We therefore hypothesize that:

*Hypothesis 3:* Religious organizational involvement will have a stronger positive association with self-rated health in countries with higher religious pluralism.

## Data and Methods

The World Values Survey (WVS) is a repeated cross-sectional survey that documents political, religious, and social attitudes over time and includes data on more than 90 societies across six continents. Data for our primary analyses come from Wave 5 (2005–2008) of the WVS. Data for the replication analyses come from Wave 6 of the WVS, described in a separate section in the following. The fifth wave consists of representative samples of adults 18 years and older in each of 58 countries, totaling 83,975 individuals. Respondents were selected using probabilistic random sampling and interviewed face-to-face. As the majority of religion and health studies examine Christian samples, the sample was limited to countries that were 50 percent or more Christian according to the CIA World Factbook for comparability. One country did not have data on voluntary organizations, leaving a total of 44,966 cases in 33 countries. Removing observations with missing data on key variables leaves an analytic sample of 42,425.

Country-level data originated from two additional sources. Data on gross domestic product (GDP) were obtained from the International Monetary Fund, while data on national religiosity came from Gallup's WorldView application. We include only two country-level variables because of the relatively small number of cases at the country level. We utilize GDP per capita as our main control for economic development because it is associated with many factors in a nation likely to influence health and is likely to be associated with organizational memberships (e.g., freedom of assembly; McCleary and Barro 2006; Präg, Mills, and Wittek 2016).<sup>3</sup>

<sup>3</sup>We examined the Human Development Index (HDI) as a potentially more encompassing country-level control. The HDI includes three dimensions: health, education, and standard of living. However, we opted not to include the HDI in our analyses because it was highly correlated with GDP ( $r = .82$ ), and the results were very similar regardless of whether it was included in our models. We also examined the degree of government regulation of religion. We used reports from the Association of Religion Data Archives (ARDA), with the 2003 report corresponding to Wave 5 of the World Values Survey (WVS) and the 2008 report corresponding to Wave 6 of the WVS (available at [www.arda.com](http://www.arda.com)). Each country was rated on a scale from 0 (no government regulation) to 10 (high government

## Dependent Variable

Self-rated health is the major health variable included in the WVS and is based on the question, “All in all, how would you describe your state of health these days?” Response options are on a 4-point scale, ranging from 1 = poor to 4 = very good.<sup>4</sup> The use of self-rated health has been well substantiated in previous studies as a measure of overall health (Kawachi et al. 1999) and has predictive validity for a host of outcomes ranging from the onset of disability to mortality (Ferraro, Farmer, and Wybraniec 1997; Idler and Benyamini 1997).

## Independent Variables

The primary independent variables are dichotomous indicators of whether or not respondents reported belonging to different types of voluntary organizations, with those reporting active membership coded as 1 and those reporting inactive or no membership coded as 0. The organizations included are church/religious, sport/recreation, art/music/educational, labor unions, political parties, environmental, professional, and charitable/humanitarian.<sup>5</sup> While this approach to measuring religious involvement lacks the level of detail found in other measures of religious involvement—notably religious service attendance—it has the advantage of being measured in the same way as involvement in other organizations, allowing for a direct comparison.

National religiosity is taken from Gallup’s WorldView application. Religiosity scores are constructed from a religiosity index based on self-reported importance of religion and attendance at religious services. We were only able to obtain religiosity data from 2010, four to five years after WVS data were collected in most countries for Wave 5 (and close to the time of Wave 6 of the WVS, used in replication analyses). We do not expect that religiosity levels changed dramatically in that short period, but it is nonetheless important to keep this limitation in mind.

Religious pluralism is measured in two ways. Our first approach is based on the Herfindahl index, a measure used in economics to express market concentration and one widely used in the literature on religious pluralism (e.g., Borgonovi

2008; Finke, Guest, and Stark 1996). The religious “market” captured by our data consists of religious traditions collapsed into 12 categories: no religion, Protestant, Catholic, Orthodox, Pagan/Spiritualist, Jewish, Buddhist, Sikh, Hindu, Muslim, Confucian, other Christian, and other. These categories were based on Fish’s (2011) coding of WVS data, supplemented by the judgment of the authors for religious groups missing from Fish’s scheme (see Appendix A for full details of Wave 5 denominations). In each nation, a pluralism index was created as:

$$pluralism = 1 - \sum p_i^2,$$

where  $p_i$  is the proportion of the  $i$ th religious group. The pluralism index ranges from 0 when there is a single religious group to just below 1 when there are many groups of equal size (Voas, Crockett, and Olson 2002).

Second, we aggregated individual affiliations by country to create dummy variables for majority Protestant, Catholic, and Orthodox, with “majority” referring to claiming 50 percent or more of the population. These represent nations with low religious pluralism, though note a crucial difference with the pluralism index—here, diversity is defined in terms of the number of *major* religious traditions (e.g., Protestant, Catholic) rather than the number of more fine-grained religious groupings. Majority Protestant nations at Wave 5 of the WVS are Finland, Ghana, New Zealand, Norway, South Africa, and Sweden; majority Catholic nations are Argentina, Brazil, Chile, Colombia, Italy, Mexico, Peru, Poland, Rwanda, Slovenia, and Spain; and majority Orthodox nations are Cyprus, Georgia, Moldova, Romania, and Ukraine. Nations lacking a religious majority are Australia, Canada, France, Germany, the Netherlands, Switzerland, Trinidad and Tobago, Great Britain, the United States, and Zambia. Only one nation (Uruguay) has a nonreligious majority; consequently, we include a dichotomous indicator for this nation in analyses that use our majority variables to simplify the interpretation of the coefficients.

## Controls

Control variables include basic demographics such as gender (female = 1, male = 0), age (in years), the square of age, education (1 = no formal education; 2 = incomplete primary school; 3 = complete primary school; 4 = incomplete secondary school: technical/vocational type; 5 = complete secondary school: technical/vocational type; 6 = incomplete secondary school: university-preparatory type; 7 = complete secondary school: university-preparatory type; 8 = some university-level education, without degree; 9 = university-level education, with degree), marital status (married or living together vs. any other status), and employment status, coded as working full-time, part-time, or being self-employed versus any other working status (e.g., being a student). We

regulation) (for further details, see Grim and Finke 2006). Inclusion of this variable did not substantively change the results, possibly because most countries in our sample had relatively low levels of government regulation (mean government regulation score = 2.32 at Wave 5 and 1.02 at Wave 6). We chose not to retain this variable in final analyses.

<sup>4</sup>Ratings of very poor were collected in one country and included here in the poor category.

<sup>5</sup>The WVS also measures membership in consumer organizations, but this question was not asked in New Zealand. We opted to remove consumer organizations from the analysis to retain data from New Zealand.

**Table 1.** Descriptive Statistics (World Values Survey, Wave 5).

	Mean	SD	Minimum	Maximum
Individual-level variables				
Self-rated health	2.88	.86	1.00	4.00
Religious organization	.25	—	0	1
Recreation organization	.17	—	0	1
Education organization	.11	—	0	1
Labor organization	.06	—	0	1
Political organization	.05	—	0	1
Environmental organization	.04	—	0	1
Professional organization	.07	—	0	1
Charitable organization	.09	—	0	1
Female	.53	—	0	1
Age	43.32	17.06	15.00	98.00
Education	5.51	2.30	1.00	9.00
Married	.60	—	0	1
Working	.53	—	0	1
Country-level variables				
GDP per capita (by \$1,000)	17.99	17.40	264.13	65,604.59
Majority Protestant	.19	—	—	—
Majority Catholic	.34	—	—	—
Majority Orthodox	.15	—	—	—
National religiosity	55.84	17.87	22.00	88.10
Pluralism	.50	.18	.10	.75

Note: N = 42,425.

did not control for personal income because doing so would have eliminated one country from the analysis that was missing income data (Argentina), and the substantive results are the same without income in the models. At the country level, we control for per capita GDP. We also control for the main effects of national level religiosity and pluralism (recall that our central hypotheses address interaction effects).

## Analyses

### Models

Analyses were conducted using ordered logit multi-level models (MLMs),<sup>6</sup> allowing the investigation of individual- and national-level predictors of self-rated health while accounting for the clustering inherent in the data (e.g., multiple individuals from the same nation that likely share

characteristics). This enabled us to produce accurate standard errors and coefficient tests. MLMs also allow an examination of how individual-level predictors interact with national or contextual factors to influence self-rated health, which allows us to test Hypotheses 2 and 3. Table 1 lists the level at which each variable is measured. All models include weights that adjust for unequal selection probabilities within countries as well as unequal sample sizes across countries, which would otherwise shift results toward patterns found in nations with larger samples (Medrano 2018). Estimates of explained country-level variance are calculated using the method described by Hox (2010).

All models were estimated using maximum likelihood (ML), which produces coefficients that are asymptotically normally distributed and can be compared to the *z* distribution to determine statistical significance (Kennedy 2008). However, hypothesis tests based on *z* scores are inappropriate for variance parameters (i.e., the MLM's random effects) that, by definition, must be positive and so can be distributed non-normally when parameters are close to 0. The usual recommendation is to test variance parameters using likelihood ratio tests (Snijders and Bosker 2012; West, Welch, and Galecki 2007). However, weighting the data invalidates the typical interpretation of the model likelihood as the joint probability of observing the data, given the model. Consequently, likelihood-based statistics such as the likelihood ratio test are no longer appropriate (StataCorp 2017). We therefore present random effects without significance tests.

<sup>6</sup>Brant tests conducted for models at both Waves 5 and 6 revealed that the parallel lines assumption was not violated for our variables of interest (all forms of organizational memberships, religious pluralism, national levels of religiosity), making an ordered logit multilevel model appropriate. To ensure the robustness of our findings, however, we also considered a generalized ordered logit model (using the *gologit2* command in Stata), which relaxes the parallel lines assumption on a variable-by-variable basis (using clustered standard errors by country). Results were substantively similar, so we opted to retain the multilevel ordinal logit model for simplicity.



## Analytic Plan

First, we estimate the effect of involvement in religious and secular voluntary organizations, controlling for the full set of controls (Hypotheses 1a and 1b). We then assess whether the effects of religious organizational involvement vary with national levels of religiosity or religious pluralism, as measured by the pluralism index and country-specific religious majorities (Hypotheses 2 and 3). This is accomplished by including cross-level interaction terms between religious organizational involvement and national religiosity, the pluralism index, and indicators for religious majority status. Interaction terms make direct interpretation of coefficients difficult given that the effects of interest have been made dependent on the level of one or more other variables. We therefore calculate average marginal effects (AMEs), which provide the estimated effects at different levels of the interacting variables (Brambor, Clark, and Golder 2006; Williams 2012).

## Results

Table 1 presents descriptive statistics for the sample. On average, respondents report health that is between fair and good (2.88),<sup>7</sup> are 43 years old, and have roughly a secondary school education (5.51). In addition, 53 percent are women, 60 percent are married, and 53 percent are working. Twenty-five percent of respondents report active membership in religious groups—the highest of any voluntary organization—while 17 percent are active in sport or recreational organizations, 11 percent in art/music/educational organizations, 6 percent in labor unions, 5 percent in political parties, 4 percent in environmental organizations, 7 percent in professional organizations, and 9 percent in charitable or humanitarian organizations.

Model 1 of Table 2 presents the estimated coefficients from a model that examines the relative contributions of religious and secular organizations to self-rated health. As can be seen, those active in a religious organization report better physical health than inactive or nonmembers ( $\beta = .12, p = .003$ ), supporting Hypothesis 1a. Substantively, this is about one-third the size of the benefit tied to membership in a sports or recreational organization ( $\beta = .36, p < .001$ ) but larger than the relationships between self-rated health and any other voluntary organization. In fact, professional organizations are the only other organization that has a significant relationship with the outcome ( $\beta = .11, p = .008$ ). Taken together, these results are partially consistent with the claim that religious organizational involvement is more beneficial than membership in other voluntary organizations (Hypothesis 1b), the (perhaps unsurprising) exception being

that those who participate in recreational organizations report better health.

But how large are these effects practically? Table 3 presents AMEs for all organizations with significant effects on self-rated health from Model 1 of Table 2 (Williams 2012). These AMEs represent the average change in the probability that respondents report poor, fair, good, or very good health. Membership in religious, professional, and recreational organizations all predict lower probabilities of reporting poor or fair health, no change in the probabilities of reporting good health, and higher probabilities of reporting very good health. In each case, the largest change is in the probabilities of reporting very good health. For simplicity, we restrict our attention to this category here and in subsequent analyses. Those actively engaged in religious or professional organizations have a .02 higher probability of reporting very good health compared to those who do not belong to these types of organizations, while those in recreational organizations have a .06 higher probability. These effects seem small but should be put in perspective. For religious organizational membership, for instance, a .02 increase in probability moves the overall predicted probability of being in very good health from .247 to .267—an increase of 8.1 percent. This effect is also roughly equivalent in size to the effect of being female on self-related health or a \$6,000 per capita increase in a nation's GDP. It is also approximately 60 percent the size of the effect of marriage (see Model 1, Table 1).

Model 1 also reveals an interesting contextual effect. National levels of religious pluralism (as measured by the pluralism index) are positively tied to self-rated health, with an increase from the lowest pluralism value observed in our sample (Georgia, pluralism = .11) to the highest pluralism value (United States, pluralism = .75) predicting an increase from .19 to .29 in the predicted probability of reporting very good health. This suggests that living in highly pluralistic nations offers health benefits to anyone, regardless of individual organizational memberships. However, this finding should be treated as preliminary given the general absence of controls at the country level.<sup>8</sup>

Model 2 of Table 2 examines whether religious context alters the relationship between membership in a religious organization and self-rated health. Contrary to Hypothesis 2, the relationship between religious organizational membership

<sup>7</sup>Of the Wave 5 sample, 6.44 percent reported poor/very poor health, 24.41 percent reported fair health, 43.46 percent reported good health, and 25.69 percent reported “very good” health.

<sup>8</sup>We attempted to account for some of the country-level differences that might affect health by restricting our sample to nations rated as high in human development in 2005 by the United Nations (Watkins 2005). These nations are Argentina, Australia, Canada, Chile, Cyprus, Finland, France, Germany, Italy, Mexico, the Netherlands, New Zealand, Norway, Poland, Slovenia, Spain, Sweden, Switzerland, Trinidad and Tobago, Great Britain, the United States, and Uruguay. Results from these 22 nations are consistent with those shown in Model 1 of Table 1: pluralism is positively related to self-rated health ( $\beta = .73, p = .004$ ).

**Table 2.** Multilevel Ordered Logit Models of Self-rated Health on Involvement in Religious Organizations and Religious Contexts (World Values Survey, Wave 5).

	Model 1		Model 2		Model 3	
	Estimated Coefficients	SE	Estimated Coefficients	SE	Estimated Coefficients	SE
Random effects						
Country: intercept	.24		.24		.20	
Fixed effects						
Intercept 1	-3.11***	(.60)	-3.16***	(.59)	-3.67***	(.69)
Intercept 2	-.96	(.59)	-1.02	(.58)	-1.52*	(.68)
Intercept 3	1.30*	(.57)	1.25*	(.56)	.74	(.67)
Individual-level variables						
Religious organization	.12**	(.04)	-.08	(.18)	.23***	(.05)
Recreation organization	.36***	(.04)	.36***	(.04)	.36***	(.04)
Education organization	.00	(.04)	.00	(.04)	.00	(.04)
Labor organization	.03	(.05)	.03	(.05)	.03	(.05)
Political organization	.01	(.06)	.01	(.06)	.01	(.06)
Environmental organization	.05	(.06)	.05	(.06)	.05	(.06)
Professional organization	.11**	(.04)	.11**	(.04)	.11*	(.04)
Charitable organization	.00	(.05)	.00	(.05)	.00	(.05)
Female	-.12**	(.04)	-.12**	(.04)	-.12**	(.04)
Age	-.06***	(.01)	-.06***	(.01)	-.06***	(.01)
Age-square	.00***	(.00)	.00***	(.00)	.00***	(.00)
Education	.13***	(.01)	.13***	(.01)	.13***	(.01)
Married	.20***	(.03)	.19***	(.03)	.20***	(.03)
Working	.34***	(.04)	.34***	(.04)	.34***	(.04)
Country-level variables						
GDP per capita (by \$1,000)	.02*	(.01)	.02*	(.01)	.01	(.01)
National religiosity	.00	(.01)	.00	(.01)	.00	(.01)
Pluralism	1.05**	(.40)	1.00*	(.40)		
Majority Protestant					.20	(.15)
Majority Catholic					-.29	(.20)
Majority Orthodox					-.67	(.37)
Majority no religion					.54	(.36)
Interaction effects						
National Religiosity × Religious Organization			.00	(.00)		
Pluralism × Religious Organization			.27	(.17)		
Majority Protestant × Religious Organization					-.18	(.10)
Majority Catholic × Religious Organization					-.21**	(.08)
Majority Orthodox × Religious Organization					-.07	(.12)
Variance explained (country level)	.42		.42		.52	

Note: N = 42,425.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$  (two-tailed tests).**Table 3.** Average Marginal Effects (AMEs) of Active Membership in Religious, Recreational, and Professional Organizations on Self-rated Health (World Values Survey, Wave 5).

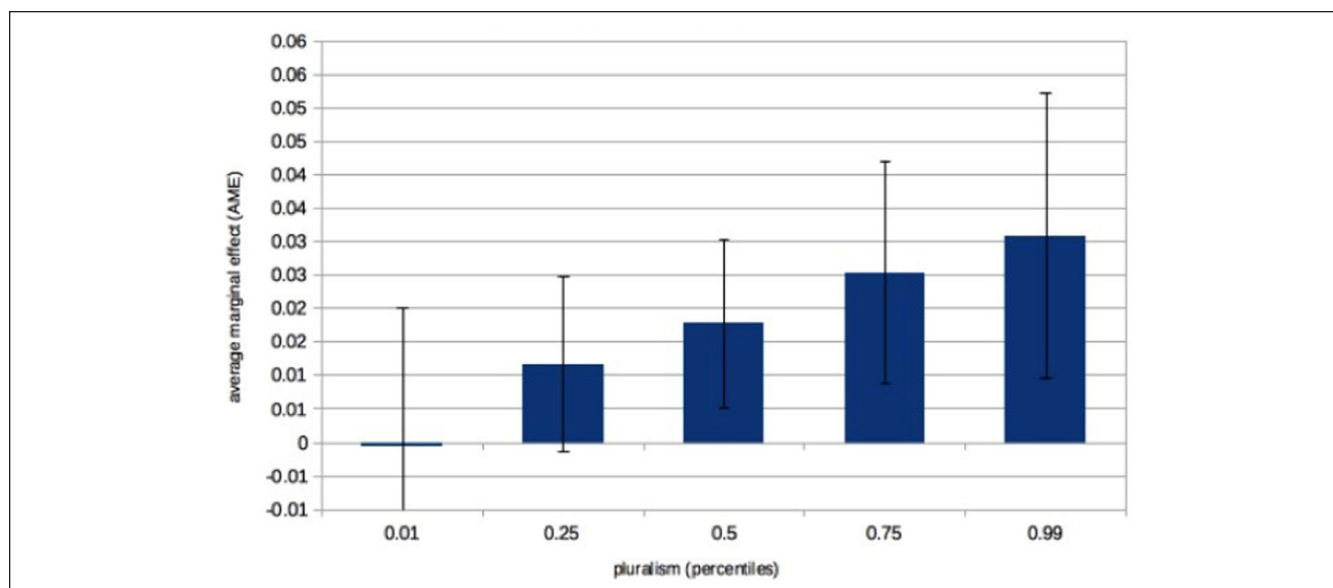
Type of Organization	Self-reported Health			
	Poor	Fair	Good	Very good
Religious	-.007**	-.014**	.002	.019**
Recreational	-.019***	-.044***	.002	.061***
Professional	-.006**	-.014*	.001	.019*

Note: AMEs are expressed as changes in probability of reporting the indicated health status.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$  (two-tailed tests).

and self-rated health is unaffected by national levels of religiosity. At first glance, results also seem to be inconsistent with Hypothesis 3, in that the effect of involvement in a religious organization is not significantly altered by national levels of religious pluralism. However, the coefficient on the relevant interaction term is large and in the anticipated direction, so it is possible that failure to achieve statistical significance is simply a matter of insufficient power—after all, the sample only contains 33 nations (and hence only 33 observations of pluralism), so any countries that deviate from the general pattern (e.g., a high pluralism nation with a low religious organizational effect) will have a large influence on the results.





**Figure 1.** Average marginal effects of active membership in a religious organization by levels of pluralism (World Values Survey, Wave 5).

(see footnote for model details).<sup>9</sup> In general, low pluralism nations have small nonsignificant effects, while high pluralism nations have larger effects. But there are plenty of exceptions that muddy this pattern. For instance, several nations with low to moderate levels of pluralism have large (but non-significant) point estimates, notably Georgia and Ukraine, while a number of highly pluralistic countries have small point estimates, such as Germany, Switzerland, and Canada. Several nations toward the middle of the spectrum even have significant negative effects (Slovenia, Norway, Rwanda). Before reading too much into these deviations, however, it is important to recognize that many of these estimates are based on relatively few individuals, leading to unreliable point estimates and large standard errors. The median sample size per nation is 1,021, which means that any nation where active religious membership is below 10 percent is generally estimating the effects of organizational involvement from fewer than 102 respondents. When these nations are removed, the expected pattern becomes much clearer. Exceptions still exist (e.g., Rwanda, Germany), suggesting that other factors not accounted for in our models also play important roles in shaping how involvement in religious organizations affects health. This variation, along with the imprecision of estimates in several nations, helps explain why the interaction between active

religious membership and the pluralism index was nonsignificant despite its large point estimate. Still, the underlying pattern seems clear—greater religious diversity predicts larger effects of religious organizational involvement on health.

Given that national levels of pluralism seem to moderate the effect of involvement in religious organizations, it becomes important to examine how this effect responds to changes in religious diversity. Figure 1 addresses this question by plotting the AMEs of involvement in religious organizations on reporting very good health at different levels of pluralism (using Model 2 from Table 2). Figure 1 shows that active church membership is predicted to have no effect in nations with pluralism at the 1st or 25th percentiles of pluralism values observed in the sample but significant effects when pluralism is at the 50th, 75th, or 99th percentile. In particular, those involved in religious organizations are predicted to have a .018 higher probability of reporting very good health in nations at the 50th percentile of pluralism, a .025 higher probability in nations at the 75th percentile of pluralism, and a .031 higher probability in nations at the 99th percentile. Practically, that suggests that health benefits of active religious involvement in religious organization are restricted to contexts that are high in religious diversity.

Model 3 of Table 2 operationalizes pluralism in a different way, using indicator variables for majority status of Protestant, Catholic, and Orthodox religious traditions and including their interactions with active membership in a religious organization. These interaction terms alter the interpretation of the religious organization main effect—rather than the estimated relationship between membership and self-rated health across all nations, it now represents that relationship just in nations that do not have a Protestant, Catholic, or

<sup>9</sup>Nation-specific estimates were calculated as the marginal effects (on the scale of the linear predictor) of religious involvement from an ordered logistic regression with interactions between an indicator for active membership in a religious organization and indicator variables for each nation. Main effects for nation indicators were also included. All other predictors were identical to those used in Model 1 of Table 2, save country-level predictors were excluded due to collinearity with the nation indicators.

**Table 4.** Average Marginal Effects (AMEs) of Active Membership in Religious Organizations on Probability of Reporting “Very Good” Health (World Values Survey, Wave 5).

Religious Majority Status	Estimated Coefficients	SE
Majority Protestant	.010	(.015)
Majority Catholic	.004	(.009)
Majority Orthodox	.022	(.014)
No majority	.042***	(.010)

\*\*\* $p < .001$  (two-tailed tests).

Orthodox majority. With the additional control for the one nation with a nonreligious majority (Uruguay), this main effect can be interpreted as the effect of involvement in a religious organization in nations without a religious majority. The estimated effect in these nations is  $\beta = .23$ , which is nearly two-thirds the size of the effect of membership in a recreational organization. By comparison, majority Catholic nations show a significantly lower effect of religious organizational membership, as evident by the negative coefficient on the majority Catholic  $\times$  religious organization interaction term ( $\beta = -.21$ ,  $p = .009$ ). Protestant nations exhibit a reduction that is almost as large ( $\beta = -.18$ ,  $p = .066$ ), though at only a marginal level of significance. Majority Orthodox nations do not differ significantly from countries without a religious majority ( $\beta = -.07$ ,  $p = .591$ ). AMEs calculated from Model 3 are shown in Table 4. Consistent with analyses based on the pluralism index, Table 4 reveals that involvement in religious organizations has an effect on self-rated health only in nations without a religious majority—that is, in pluralistic nations. Here, active membership leads to a .042 higher predicted probability of reporting health that is very good.<sup>10</sup>

Alone, both the analyses based on the pluralism index and analyses based on the majority religious tradition can be criticized as providing insufficient evidence for the moderating effect of religious pluralism, the former due to a nonsignificant interaction term and the latter due to its rather crude

operationalization of pluralism. However, it is telling that both sets of results point to the same conclusion. Taken together, these analyses lend support to the claim that the effects of involvement in religious organizations are stronger in religiously pluralistic nations, supporting Hypothesis 3.

### Replication in WVS Wave 6

To test the robustness of our findings, we replicated analyses using data from Wave 6 of the WVS (2010–2014). The sixth wave consists of representative samples of adults 18 years and older in each of 60 countries, totaling 90,350 individuals. To be consistent with Wave 5, the sample was limited to the countries that were 50 percent or more Christian: Australia, Brazil, Chile, Colombia, Cyprus, Georgia, Germany, Ghana, Mexico, the Netherlands, New Zealand, Peru, Poland, Romania, Slovenia, South Africa, Spain, Sweden, Trinidad and Tobago, Ukraine, and the United States ( $n = 21$  countries). Three other predominantly Christian countries were not included in our sample due to high amounts of missing data on key independent and control variables (Argentina, Philippines, and Uruguay). Majority Protestant nations at Wave 6 are Ghana and Sweden; majority Catholic nations are Brazil, Chile, Colombia, Mexico, Peru, Poland, Slovenia, and Spain; and majority Orthodox nations are Cyprus, Georgia, Romania, and Ukraine. Only one country, the Netherlands, had a nonreligious majority. Countries lacking a religious majority include Australia, Germany, New Zealand, South Africa, Trinidad and Tobago, and the United States. Removing missing data left a sample of 30,098. Descriptive statistics for Wave 6 closely mirror the Wave 5 sample (see Appendix B, Table B1).<sup>11</sup>

Table 5 shows the results from reestimating analyses models (Table 2) using Wave 6 data. Model 1 presents the estimated coefficients from a baseline model that examines the relative contributions of religious and secular organizations to self-rated health. As at Wave 5, those active in a religious organization report better physical health than inactive or nonmembers ( $\beta = .15$ ,  $p < .001$ ), an effect that is about 40 percent the size of the benefit tied to membership in a sports or recreational organization ( $\beta = .36$ ,  $p < .001$ ). Unlike at Wave 5, belonging to a charitable organization is associated with better self-rated health ( $\beta = .12$ ,  $p < .001$ ), and the effect of membership in a professional organization now exceeds the magnitude of the effect for religious organizational membership ( $\beta = .19$ ,  $p < .001$ ). Model 1 of Table 5 also reveals that national levels of religious pluralism (as measured by the religious pluralism index) are positively tied to self-rated health ( $\beta = 1.29$ ,  $p < .001$ ), the same contextual effect

<sup>10</sup>Work by May and Smilde (2016) suggests that religious involvement may have different effects depending on a person's individual religious affiliation. We examined an interaction between belonging to a religious organization and a dichotomous variable of being Christian/non-Christian to test whether non-Christians living in majority Christian nations might have differential health returns of active religious participation. This term was not significant in the full model considering all nations, regardless of religious majority, or in analyses that disaggregated the sample into majority Protestant, Catholic, and Orthodox nations. Our findings may diverge from the May and Smilde (2016) study because we defined religious majority as one religion claiming 50% or more of the population, where May and Smilde (2016) found that religious affiliation seemed to produce divergent health outcomes for practicing religious minorities only once Catholics had a 90% or greater share of the religious market.

<sup>11</sup>At Wave 6, 5.81 percent of the sample reported poor/very poor health, 22.80 percent reported fair health, 44.46 percent of the sample reported good health, and 26.93 percent of the sample reported very good health.

**Table 5.** Multilevel Ordered Logit Models of Self-rated Health on Involvement in Religious Organizations and Religious Contexts (World Values Survey, Wave 6).

	Model 1		Model 2		Model 3	
	Estimated Coefficients	SE	Estimated Coefficients	SE	Estimated Coefficients	SE
Random effects						
Country: intercept	.27		.29		.29	
Fixed effects						
Intercept 1	-1.86***	(.31)	-2.02***	(.29)	-3.42***	(.38)
Intercept 2	.36	(.32)	.20	(.31)	-1.21**	(.38)
Intercept 3	2.66***	(.31)	2.50***	(.29)	1.09**	(.36)
Individual-level variables						
Religious organization	.15***	(.04)	-.38*	(.19)	.28***	(.08)
Recreation organization	.36***	(.06)	.35***	(.05)	.36***	(.05)
Education organization	-.04	(.05)	-.04	(.05)	-.03	(.05)
Labor organization	-.11	(.06)	-.10	(.06)	-.10	(.06)
Political organization	.06	(.07)	.06	(.06)	.05	(.07)
Environmental organization	-.06	(.08)	-.08	(.08)	-.06	(.07)
Professional organization	.19**	(.05)	.18**	(.05)	.19**	(.54)
Charitable organization	.12**	(.05)	.13**	(.05)	.13**	(.05)
Female	-.16**	(.06)	-.12**	(.04)	-.16**	(.06)
Age	-.06***	(.01)	-.06***	(.01)	-.06***	(.01)
Age-square	.00**	(.00)	.00***	(.00)	.00**	(.00)
Education	.13***	(.01)	.13***	(.01)	.13***	(.01)
Married	.19***	(.03)	.19***	(.03)	.19***	(.03)
Working	.41***	(.05)	.40***	(.05)	.41***	(.05)
Country-level variables						
GDP per capita (by \$1,000)	.02***	(.00)	.02**	(.00)	.02***	(.00)
National religiosity	.02***	(.00)	.00	(.01)	.01***	(.00)
Pluralism	1.29***	(.08)	1.12***	(.10)		
Majority Protestant					.39***	(.06)
Majority Catholic					-.49***	(.06)
Majority Orthodox					-.53***	(.09)
Majority no religion					.25***	(.03)
Interaction effects						
National Religiosity × Religious Organization			.004†	(.00)		
Pluralism × Religious Organization			.48†	(.25)		
Majority Protestant × Religious Organization					-.17*	(.07)
Majority Catholic × Religious Organization					-.18*	(.08)
Majority Orthodox × Religious Organization					-.35***	(.09)
Variance explained (country level)	.61		.62		.65	

Note: N = 30,098.

† $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$  (two-tailed tests).

observed at Wave 5. This again suggests that living in highly pluralistic nations offers health benefits to anyone, regardless of individual organizational memberships. However, national religiosity is now associated with better self-rated health as well, in contrast to the results at Wave 5 ( $\beta = .02$ ,  $p < .001$ ).

Model 2 of Table 5 examines the moderating effect of religious context on the relationship between religious organization and self-rated health. Results show a marginally significant

moderating effect of both religious pluralism ( $p = .058$ ) and national religiosity ( $p = .059$ ), both in the positive direction, such that religious organizational membership in a more pluralistic or more religious national context is more beneficial for self-rated health. As at Wave 5, AMEs suggest that religious organizational involvement has no effect in nations low in pluralism but significant effects in nations high in pluralism. More specifically, those involved in religious organizations are predicted to have a .010 higher probability of reporting

**Table 6.** Average Marginal Effects (AMEs) of Active Membership in Religious Organizations on Probability of Reporting Very Good Health (World Values Survey, Wave 6).

Religious Majority Status	Estimated Coefficients	SE
Majority Protestant	.010	(.016)
Majority Catholic	.006*	(.003)
Majority Orthodox	-.003*	(.002)
No majority	.023***	(.006)

\* $p < .05$ . \*\*\* $p < .001$  (two-tailed tests).

very good health in nations at the 50th percentile of pluralism, a .014 higher probability in nations at the 75th percentile of pluralism, and a .019 higher probability in nations at the 99th percentile (not shown). The moderating effect of national levels of religiosity is unique to Wave 6, a point we return to in the discussion. We also calculated average marginal effects for national religiosity scores. Individuals involved in religious organizations are predicted to have a .011 probability of reporting very good health in nations at the 50th percentile of national religiosity, a .014 higher probability in nations at the 75th percentile of national religiosity, and a .023 higher probability in nations at the 99th percentile of national religiosity. Therefore, religious organizational membership is a predictor of better self-rated health only in highly pluralistic or high national religiosity contexts.

Finally, Model 3 of Table 5 operationalizes religious pluralism using indicator variables for nations with Protestant, Catholic, and Orthodox majorities. At Wave 5, only majority Catholic nations show a significantly lower effect of religious organizational membership on health (though the interaction is almost significant for majority Protestant nations). At Wave 6, nations with any of the religious majorities show a significantly lower effect of religious organizational involvement on health (Protestant:  $\beta = -.17$ ,  $p = .015$ ; Catholic:  $\beta = -.18$ ,  $p = .025$ ; Orthodox:  $\beta = -.35$ ,  $p < .001$ ). AMEs calculated from Model 3 are shown in Table 6. Consistent with Wave 5, involvement in religious organizations only has a large, positive effect on self-rated health in nations without a religious majority. Here, active membership leads to a .023 higher predicted probability of reporting health that is very good.

## Discussion

Previous research has shown that participation in organizations can benefit health (e.g., Hamzat and Seyi-Adeyemo 2008; Lum and Lightfoot 2005), and limited available evidence suggests that religious organizational involvement might be especially efficacious (e.g., Huijts and Kraaykamp 2011; Krause 2006). However, evidence for the unique benefits of religious involvement is based primarily on samples

from the United States and Europe, and it is unclear whether it generalizes to other contexts. Moreover, previous research provides mixed evidence as to whether national levels of religiosity moderate the effects of religious organizational involvement and has not investigated the moderating role of religious pluralism.

The present study advances the study of religion and health by demonstrating that involvement in a religious organization significantly predicts self-rated health in samples of 33 (Wave 5) and 21 (Wave 6) majority Christian nations drawn from North and South America, Europe, Australia, Asia, and Africa. As hypothesized, religious involvement is tied to higher self-rated health, but only in nations with high levels of religious pluralism. In these countries, the magnitude of this relationship exceeds that of involvement in most secular organizations. Of these secular organizations that produced associations exceeding religious involvement, belonging to a sports/recreational organization had the association largest in magnitude. This may reflect that fact that involvement in sports and recreational organizations promotes exercise and fosters social integration through participation in team-based activities in the pursuance of mutual goals (Eime et al. 2010). It may also represent a selection effect if healthy individuals are disproportionately likely to join these groups while those in poor health avoid them. This may render the effect of religious participation on health even more significant by comparison, since past research indicates that the selection of healthy people in and out of religion occurs but is not a significant factor in explaining religious effects on health (e.g., Idler and Kasl 1995).

Additionally, the present study considered the influence of national-level religious context, testing the role of national-level religiosity and religious heterogeneity. At Wave 5, national religiosity had neither a direct main effect nor a moderating influence on the relationship between active membership in a religious organization and self-rated health. This result is consistent with prior work that finds no significant main effect of national level religiosity on health (Stavrova 2015) and a previous study that fails to find amplification of religious involvement effects by religious context in European nations (Huijts and Kraaykamp 2011). However, at Wave 6, we find evidence for a direct main effect and marginal evidence for a moderating role of national religiosity. These divergent findings may be due to the fact that the Gallup Religiosity measure was collected four to five years after the Wave 5 in 2010 and so may misrepresent the actual levels of religiosity at the time of the survey. At Wave 6, the 2010 Gallup Score represents a more contemporaneous measure of national religiosity. Our Wave 6 finding of a marginally significant moderating effect of national religiosity on religious group membership is in line with the claim that religious effects are more pronounced in ratifying social environments and the findings of both Stavrova (2015) and Hayward and



Elliott (2014). However, other forces tied to religion might offset the beneficial effects of living in a ratifying religious environment. For instance, Olson and Li (2015) found that the percentage of a nation's population that is religious is negatively associated with trust in others, which could act as an opposing force. High levels of government restriction on religion could also counteract religion/health effects. Hayward and Elliott (2014), for example, found that religious service attendance was associated with worse health in nations characterized by high government restriction and low overall levels of service attendance. However, religious individuals reported better health in restricted nations if overall norms of religiosity were also high. Determining whether the inconsistent findings in the literature for national levels of religiosity are due to differences in measurement or counteracting mechanisms is a topic that should be addressed in future research.

Our results point more clearly to a moderating role for religious diversity. Using an established pluralism index, we found evidence at both Waves 5 and 6 that the relationship between active membership in a religious organization and self-rated health is higher in nations with more religious diversity. In fact, these analyses suggested that the religious involvement has an effect *only* in nations higher in diversity and no effect in religiously homogeneous countries. These results were confirmed in analyses at both waves that operationalized pluralism with reference to which religious traditions had a majority in each nation. Here, involvement in religious organizations only had a sizable positive relationship with self-rated health in countries that *lacked* a religious majority. Collectively, these analyses suggest that religious heterogeneity at the national level matters for health. We hypothesize that this may be because national-level heterogeneity drives social integration at the local level, effectively allowing individuals to find religious congregations that best meet their needs, consistent with market approaches to religion (Finke and Stark 1998; Iannaccone 1991). The extent to which self-selection into religious groups can explain the heterogeneity/health relationship is an important topic for future research.

Certain limitations should be considered in interpreting this study's findings. First, the interpretation of active membership in an organization may differ by country context, which may explain some of the variation in the effects of active religious membership observed in our sample. For example, it may be the case that in some nations, active religious membership might be characterized by attending church services on a weekly basis, while religious norms in other countries might emphasize attendance around religious holidays and nominally belonging to a congregation. The meaning of other organizational memberships may likewise differ by country. In nations that have strong and active professional associations, membership might translate into frequent interactions and friendships, which should be health-promoting. But in other contexts, it is plausible that

professional membership might include only infrequent interactions, such as attending a yearly meeting or keeping up the membership to earn a credential in the absence of attending events. This suggests that our results might underestimate the effects of religious involvement to the extent that our measure groups individuals who differ substantially in their actual involvement in religious groups.

Along similar lines, we have no information on how often people gather in secular organizations compared to religious organizations. Labor organizations or sporting organizations may meet less frequently than Christian religious organizations that often meet once a week or more. This may mean that the benefits of religious involvement are due to frequency of contact leading to regular and consistent social support. Indeed, prior research has found that in highly religious countries, higher levels of social support help explain why religious individuals tend to report higher life satisfaction (Stavrova et al. 2013). While we cannot adjudicate between religion as social contact and other aspects of religious benefit with our data, there is evidence that religious support might be especially helpful over and beyond secular support (e.g., Krause 2006).

Another limitation is that this study focuses on predominantly Christian nations. Future work should examine whether religious involvement has the same beneficial effects in non-Christian countries and whether these effects are also moderated by levels of religious pluralism. More work is also needed to probe the concept of religious pluralism with more nuanced measures. As Van Tubergen, Grotenhuis, and Ultee (2005) note, the same nominal level of pluralism at the national level may mask great differences in the extent to which various religious groups represent a relative majority in a local area. Locally restricted religious diversity would undercut the ability of individuals to find religious organizations that meet their needs and potentially diminish religious health benefits. This in turn would weaken the observed relationship between national levels of pluralism and individual health. Future research should seek to replicate our findings using diverse samples of countries, religious faiths, and health outcomes to determine the generalizability of the beneficial association of religiously pluralistic contexts on health and unpack why religious pluralism is beneficial for members of society.

Despite these limitations, to our knowledge, this study provides the most comprehensive comparison between the impact of religious organizational membership and the impact of secular organizational membership on health by extending analyses outside the US context to a sample of 33 majority-Christian nations. Further, this study examines the moderating impact of national religious context on these relationships, finding that the benefits of religious involvement are restricted to nations high in religious pluralism.

## Appendix A: Coding of Religious Denominations (World Values Survey, Wave 5)

**Table A1.**

VI85 Code	Label	Recoded Value
0	None	No religion
4	Ancestral worshipping/tradition	Pagan/Spiritualist
5	Anglican	Protestant
6	Armenian Apostolic Church	Protestant
7	Assembly of God	Protestant
8	Bahai	Other
9	Baptist	Protestant
12	Buddhist	Buddhist
14	Cao dai	Other
17	Christian	Other Christian
19	Christian Reform	Protestant
20	Church of Christ/Church of Christ/C	Protestant
25	Evangelical	Protestant
28	Free church/nondenominational church	Protestant
29	Greek Catholic	Catholic
30	Gregorian	Orthodox
31	Hindu	Hindu
32	Hoa hao	Buddhist
35	Independent African Church (e.g., ZCC, S)	Protestant
37	Israelita Nuevo Pacto Universal (FREPAU)	Other
38	Jain	Other
39	Jehovah witnesses	Other Christian
42	Jew	Jewish
44	Lutheran	Protestant
46	Methodists	Protestant
48	Mormon	Other Christian
49	Muslim	Muslim
50	Native	Pagan/Spiritualist
52	Orthodox	Orthodox
53	Other	Other
54	Other: Brasil: Espirit, candomblé, umbanda	Pagan/Spiritualist
55	Other: Christian com	Protestant
56	Other: Oriental	Confucian
60	Pentecostal	Protestant
61	Presbyterian	Protestant
62	Protestant	Protestant
64	Roman Catholic	Catholic
66	Salvation Army	Protestant
68	Seven Day Adventist	Protestant
70	Shia	Muslim
71	Sikh	Sikh
73	Spiritista	Pagan/Spiritualist
74	Spiritualists	Pagan/Spiritualist
75	Sunni	Muslim
77	Taoist	Pagan/Spiritualist
78	The Church of Sweden	Protestant
86	Zoroastrian	Other
87	Ratana	Pagan/Spiritualist
89	New Apostolic Church	Protestant
90	Yiguan Dao	Pagan/Spiritualist

Note: Table A1 gives the original denomination code stored in variable VI85 of Wave 5 of the World Values Survey, along with how it was recoded for analyses.

## Appendix B: World Values Survey Wave 6 (Replication Analyses)

**Table B1.** Descriptive Statistics (World Values Survey, Wave 6).

	Mean	SD	Minimum	Maximum
Individual-level variables				
Self-rated health	2.93	.85	1.00	4.00
Religious organization	.28	—	0	1
Recreation organization	.17	—	0	1
Education organization	.10	—	0	1
Labor organization	.06	—	0	1
Political organization	.05	—	0	1
Environmental organization	.04	—	0	1
Professional organization	.06	—	0	1
Charitable organization	.07	—	0	1
Female	.53	—	0	1
Age	44.25	17.53	16.00	99.00
Education	5.91	2.24	1.00	9.00
Married	.59	—	0	1
Working	.52	—	0	1
Country-level variables				
GDP per capita (by \$1,000)	21.45	18.46	1,357.60	56,360.40
Majority Protestant	.09	—	—	—
Majority Catholic	.34	—	—	—
Majority Orthodox	.17	—	—	—
National religiosity	57.65	17.34	22.00	88.10
Pluralism	.54	.17	.11	.75

Note: N = 30,098.

**Table B2.** Religious Denominational Codes.

VI44 Code	Label	Recoded Value
0	None	No religion
1	Aglipayan	Catholic
4	Ancestral worshipping/tradition	Pagan/Spiritualist
5	Anglican	Protestant
6	Armenian Apostolic Church	Protestant
9	Baptist	Protestant
12	Buddhist	Buddhist
14	Cao dai	Other
17	Christian	Other Christian
19	Christian Reform	Protestant
20	Church of Christ	Protestant
21	Confucianism	Confucian
22	Druse	Muslim
25	Evangelical	Protestant
28	Free church/nondenominational church	Protestant
29	Greek Catholic	Catholic
30	Gregorian	Orthodox
31	Hindu	Hindu
34	Iglesia ni Cristo	Other Christian
35	Independent African Church (e.g., ZCC, S)	Protestant
39	Jehovah witnesses	Other Christian
42	Jew	Jewish

(continued)

Table B2. (continued)

VI44 Code	Label	Recoded Value
44	Lutheran	Protestant
46	Methodists	Protestant
48	Mormon	Other Christian
49	Muslim	Muslim
50	Native, folk religion	Pagan/Spiritualist
52	Orthodox	Orthodox
53	Other, not specific	Other
54	Other: Brasil: Espirit, candombl, umbanda	Pagan/Spiritualist
55	Other: Christian com	Protestant
57	Other: Phillipines	Other
60	Pentecostal	Protestant
61	Presbyterian	Protestant
62	Protestant	Protestant
64	Roman Catholic	Catholic
66	Salvation Army	Protestant
68	Seven Day Adventist	Protestant
70	Shia	Muslim
71	Sikh	Sikh
73	Spiritista	Pagan/Spiritualist
74	Spiritualists	Pagan/Spiritualist
75	Sunni	Muslim
77	Taoist	Pagan/Spiritualist
78	The Church of Sweden	Protestant
86	Zoroastrian	Other
87	Ratana	Pagan/Spiritualist
89	New Apostolic Church	Protestant
90	Yiguan Dao	Pagan/Spiritualist
91	Daoism	Other
12001	DZ: Christian (Quakers, Jehovah's Witness)	Other Christian
360001	AU: Uniting Church	Protestant
528001	Dutch Reformed	Protestant
528002	Reformed Churches in the Netherlands	Protestant
710001	ZA: Evangelical/Apostolic Faith Mission	Protestant
710002	ZA: African Traditional Religion	Other

Note: The table gives the original denomination code stored in variable VI44 of Wave 6 of the World Values Survey, along with how it was recoded for analyses.

### Authors' Note

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