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ORIGINAL PAPER

# Cross-National Analysis of the Influence of Cultural Norms and Government Restrictions on the Relationship Between Religion and Well-Being

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**Abstract** This study examines the interaction between cultural religious norms and governmental restrictiveness as country-level moderators of the relationship between individual religiousness and well-being, including both happiness and physical health. Data come from five waves of World Values survey data from 221 separate surveys conducted in 88 countries, with data from 317,109 individuals. Three dimensions of individual religiousness were assessed, along with corresponding country-level norms aggregated from these measures. Three-way cross-level interactions were tested to examine whether the extent of government restriction modified the relationship between national religious norms and the individual-level association between religious factors and well-being outcomes. Results supported the hypothesis that self-reported religion is most strongly related to greater happiness and better self-reported health in societies where it is freely and widely practiced. In contrast, religiousness may be harmful when it is relatively deviant, and restrictions of freedom may serve to further exacerbate this effect. These results suggest that the positive association between religion and well-being is not universal, but depends upon the right to express religion freely and the opportunity to practice with like-minded others.

Data used in this study are publically available and may be obtained for the purposes of replication from Freedom House (www.freedomhouse.org), the World Bank (www.worldbank.org), and the World Values Survey (www.worldvaluessurvey.org).

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## Introduction

In recent decades, a growing body of research has demonstrated an association between religiousness and individual well-being on measures ranging from happiness to physical health to mortality (Koenig 2009; Blasi 2011; Idler 2010). Multiple psychosocial mediators have been proposed to link religion with these outcomes, including social support provided by religious groups (Ellison and George 1994; Krause 2011), cognitive resources that aid in coping with stress (Pargament 1997), and access to a positive social identity (Ysseldyk et al. 2010; Hayward and Elliott 2011). Most of this research is based on samples from the US, and attempts to replicate it have produced mixed results in Europe (Braam et al. 1997, 2004; La Cour et al. 2006) and Asia (Brown and Tierney 2009; Yeager et al. 2006). A number of recent studies have used cross-national data to attempt to account for some of the apparent differences in the relationship between religion and happiness in terms of differences in the country-level social context, including cultural levels of religiousness (Diener et al. 2011; Okulicz-Kozaryn 2010) and governmental regulation of religion (Elliott and Hayward 2009). The present study extends this approach by focusing on reported physical health as an outcome, in addition to happiness, and by examining interactions among country-level factors.

### Components of Religion that Influence Well-Being

Research on the individual aspects of religion that influence well-being has examined both public and private religiousness. Public religiousness is usually assessed by attendance at religious services and engagement in other group activities related to organized religion. Participation in organized religion is thought to promote well-being by allowing access to social support from other members of one's religious community, its leader(s), and God (Krause 2008). Social support, in turn, is positively related to well-being (Cohen 2004) and religious-based social support may be particularly salutary to the extent that the religious community is especially loving, forgiving, and nonjudgmental toward one another (Krause 2011). Although a great deal of evidence has mounted in favor of a positive association between public religiousness and well-being (Koenig et al. 2012), at least within the US, most studies rely on cross-sectional data and therefore cannot rule out the possibility that people with greater well-being are more likely to participate in public religious activities. For example, longitudinal research provides some evidence that women with early onset depression are also more likely than others to stop attending religious services (Maselko et al. 2012).

A second reason why public religiousness may improve well-being has to do with the effects of identifying with a group that is held in high regard in society, therefore promoting a more positive sense of self. More specifically, processes involving social attractiveness within the religious community may increase self-esteem to the

extent that the individual emulates the behaviors expected of prototypical group members (Hayward and Elliott 2009, 2011). Religious identity may provide an especially strong source of social identity because it ties together a strong and salient social category with a set of morally authoritative beliefs and affectively compelling experiences (Ysseldyk et al. 2010). It may also serve to promote well-being by reducing uncertainty about the self (Hogg et al. 2010) and by buffering against perceived discrimination based on other identities (Krause 2004; Bierman 2006). Additionally, religion may promote well-being by providing a sense of meaning or purpose in life (Pargament et al. 2005), and by increasing sense of control (Schieman 2008) which itself is positively related to well-being (Lachman and Weaver 1998).

On a more psychological and relatively private level, religiousness may improve individual well-being by providing positive coping strategies such as beliefs that offer relatively benevolent explanations of difficult life experiences like the death of a loved one (Ano and Vasconcelles 2005). Private religiousness may also protect well-being by serving as a buffer between challenging external realities, such as living in a relatively repressive society, and internal states, such as overall happiness or perceived physical health.

Religiousness may promote physical health indirectly by improving mental health, such as by increasing the individual's motivation and capacity to engage in positive health behaviors, such as reducing cigarette and alcohol consumption, increasing physical exercise, and encouraging medical compliance (Hill and Cobb 2011). Other effects on physical health may accrue via psycho-neuroimmunological pathways (Koenig 2002), particularly through influencing the production of stress hormones which may contribute to associations between religious factors and physical outcomes including cardiovascular recovery (Ai et al. 2010) and brain health (Owen et al. 2011).

## Religion and Well-Being in Cross-National Context

Studies with non-US samples find mixed results when analyzing the association between religiousness and well-being. For example, participation in religious worship has been found to aid in coping among refugees from Kosovo and Bosnia (Ai et al. 2003) among minority groups with mental illness in the UK (Bhui et al. 2008) and among the general population in Pakistan (Khan and Watson 2006), whereas findings regarding the effects of attendance depend on the country. Attendance at religious services has been found to have beneficial associations with mental health in samples from the Netherlands (Braam et al. 2004), Australia (Francis and Kaldor 2002), and Japan (Krause et al. 1999), but harmful associations among the elderly in China (Brown and Tierney 2009).

The subjective importance of religion has been found to be negatively associated with depression in the Netherlands (Braam et al. 1997), positively related to well-being in Australia and in Pakistan (Francis and Kaldor 2002; Suhail and Chaudhry 2004), positively associated with adjustment to death in Bangladesh (Hossain and Siddique 2008), and positively associated with happiness in Hungary (Lelkes 2006). However, it has also been associated with worse health among Japanese men

(Tsunoda et al. 2008), and frequency of prayer is associated with worse mental and physical health in nine European nations (Hank and Schaan 2008). Because these associations are cross-sectional, it is not necessarily clear whether negative effects are more likely to be indicative of a genuinely harmful relationship, or whether they simply reflect increased use of religious coping in response to negative life events.

More recently, researchers have applied multilevel analytical techniques to attempt to explain some of these discrepancies within a broader framework, seeing differing patterns at the individual level as the outcome of differences in the broader social context in which they occur. Diener et al. (2011) found that high individual religiousness was more strongly associated with benefits to subjective well-being in places where the societal level of religiousness was also high, and furthermore that the benefits of being religious appeared to be greater in regions facing greater material deprivation. Similar person-environment fit relationships have been reported by studies finding that belief in God is only associated with greater life satisfaction in countries where the majority of people also believe in God (Okulicz-Kozaryn 2010), and that the health benefit of being Protestant declines as the proportion of a country's population that is Catholic goes up (Huijts and Kraaykamp 2011). With regard to government restriction on religious freedom, Elliott and Hayward (2009) found that in countries where religious expression is highly regulated, public expression of religion (i.e., attendance at religious services) is actually detrimental to well-being, whereas one's private religious identity is more strongly related to well-being than is the case in countries where religious expression is relatively free. In a comparison of countries in Europe, Nicholson et al. (2009) found some evidence that the relationship between subjective religiousness and physical health declined with increasing secularism.

## Present Study and Hypotheses

In this study, we focus on two key aspects of the country-level context: (1) the extent to which the population is religious, based on dimensions of organizational practice, personal salience or importance of God, and religious identification; and (2) the extent to which personal expression is restricted. Two theories support the expectation that individual religious beliefs and behaviors are more strongly related to well-being in relatively more religious social contexts: (1) the moral communities hypotheses; and (2) self-categorization theory. Drawing on a Durkheimian framework (Durkheim 1995), the moral communities hypothesis predicts that when religious individuals are surrounded by other people who are also religious, their own religion will have a greater impact on their well-being because religious norms that promote good health are more strongly reinforced through social interaction with like-minded people (Graham and Haidt 2010; Stark 1996). Although this perspective focuses primarily on communities at the local level, a number of studies suggest that religious cultural values at the national level likewise have important implications in shaping individual beliefs, values, and outcomes (e.g., Hayward and Kemmelmeier 2011).

Self-categorization theory (Turner et al. 1987) suggests that psychological well-being is enhanced when one associates with a social group that represents widely

held moral and behavioral ideals. More specifically, individuals' religious affiliation will benefit their psychological well-being when they successfully internalize positive attributes of their religious community, thereby allowing them to share in the group's collective self-esteem (Crocker and Luhtanen 1990). Given the critical role of the social group in determining individual well-being, we would expect that the more widely held the religious group's ideals, the greater their influence will be on individual well-being. Conversely, in places where religious self-categorization places the individual in a minority position, well-being is likely to suffer more as individual religiousness rises because high religious identification is felt to be in conflict with national identification more broadly. As such, they are likely to suffer from religion-based identity threat, which previous research has found to be detrimental to well-being, especially among those who are more religious (Friedman and Saroglou 2010; Jasperse et al. 2012). Self-categorization theory also lends itself to an explanation of the role of government restrictions on religious freedom because when religious expression is prescribed rather than freely chosen, individuals will be less likely to interpret their religious categorization as diagnostic of their self-worth (Elliott and Hayward 2009).

In this study, we combine the two approaches just described by simultaneously assessing cultural religiousness and government regulation and as potential moderators of the religion/well-being association. In addition, we examine both mental and physical health outcomes. First, we test the moderating influence of government regulation to examine how it affects happiness and physical health. We hypothesize that individual public enactment of religion will be less beneficial when regulation is high, whereas private expression of religion will be more beneficial. Second, we hypothesize that that the positive influence of individual religiousness (whether public or private), on health, (whether mental or physical) will be greater in countries where the corresponding population-level value of religiousness is relatively high, i.e., where religion is more normative. To the extent that government regulation and cultural religiousness interact in moderating the individual religion/well-being link, we hypothesize that government restriction of personal freedom generally (including religious freedom) will reduce the positive role of cultural religiousness because religion, even when widely practiced, will be imposed rather than freely chosen.

## Methods

### Data

Data from the combined European and World Values Surveys (WVSs) (European Values Study Group and World Values Survey Association 2010) were used, and were supplemented with country-level economic and political data from other sources. The WVS is a cross-national trend survey of individual attitudes and beliefs, which has been conducted in five waves between 1981 and 2008. Each survey consists of a representative sample of a country's residents. The subsets of countries included in the WVS have varied between waves, so that there have been a

total of 248 surveys from 98 countries, including more than 350,000 individual respondents. In some cases, particular items were excluded at the national level, leading to missing data for an entire survey. In the present analyses, survey-level missing data for one or more key religion items led to the exclusion of 27 surveys, resulting in a final sample including 221 surveys from 88 countries (N = 317,109). A further 31 surveys did not include a measure of self-reported health, limiting analyses using that variable to data comprising 190 surveys from 86 countries (N = 280,437).

## Measurement

The key outcomes examined in these analyses were happiness and self-reported health. Happiness was measured on a four-point scale with a single item: "Taking all things together, would you say you are: not at all happy, not very happy, quite happy, or very happy". Health was measured on a five-point scale with a single item: "All in all, how would you describe your state of health these days? Would you say it is very poor, poor, fair, good, or very good?" Self-rated health has been found to be independent of positive affect and predictive of clinical outcomes including medical service use and mortality in a number of samples (Idler and Benyamini 1997; Miilunpalo et al. 1997).

Three types of religiousness were included in this study: organizational participation, importance of God, and private religious identity. Organizational participation is measured by reported frequency of attendance at worship services (excluding weddings and funerals) on a six-point scale from "never or practically never" to "more than once a week." Importance of God was measured by a single item: "How important is God in your life" with responses on a ten-point scale from "not at all important" to "very important." Personal identification as a religious person was measured in response to the question: "Independently of whether you attend religious services or not, would you say you are: (a) a religious person, (b) not a religious person, or (c) a convinced atheist". For the purposes of these analyses, the final two responses were coded together to create a binary variable contrasting those respondents identifying as religious with those identifying either as not religious or convinced atheists.

Gender and current age were measured by self-report in the WVS. Household income was scored by within-country decile to create a ten-point scale of lowest to highest income relative to other households in the same country at the time of data collection. Group religious norms were gauged by aggregating survey-level data from the individual-level WVS data. Within-country means were computed for each of the three religiousness variables described above: frequency of worship attendance, importance of God, and private religious identity.

A measure of government restrictiveness was constructed by taking the sum of the Freedom House political rights and civil liberties indexes (Freedom House 2010a). These indexes provide a rating (from 1 to 7) of the degree of freedom or restriction by the government within each country for every year since 1972. Criteria used in compiling the political rights index include elections, political pluralism, and functioning government. Criteria used in compiling the civil liberties

index include freedom of expression and belief (including religious expression and belief), associational rights, rule of law, and personal autonomy (Freedom House 2010b).

Per capita GDP data were obtained from the World Bank (World Bank 2010) and matched with WVS data by country and survey year. GDP is a measure of national wealth, which is generally related with higher mean levels of health and subjective well-being (Huijts and Kraaykamp 2011). All individual-level non-categorical variables were centered on their respective grand means.

## Missing Data

Multiple imputation of missing values, using the Markov Chain Monte Carlo (MCMC) method was performed for all individual-level variables (excluding the dependent variables happiness and health) using MI procedure in SAS 9.2. The MCMC method simulates random draws of values from the observed joint distributions of all other variables included in the model (Horton and Lipsitz 2001; Schafer 1999). Consistent with recommendations based on multiple imputation theory (Graham et al. 2007), five datasets were independently imputed. All multivariate analyses presented in this paper were run separately on each imputed dataset and then aggregated using the SAS 9.2 MIANALYZE procedure.

## Design of Main Analyses

To deal with the complex structure of the data, a linear mixed modeling approach was used.[1] This procedure allows for data clustered hierarchically within multiple non-independent groups to be used to predict individual-level outcomes based on a combination of effects at both the individual and group levels (Kashy and Kenny 2000; Krull and MacKinnon 2001). In the present analyses, a three level hierarchical model was applied, with individual survey respondents (level 1), nested within country-by-wave surveys (level 2), and nested within countries (level 3). Level 3 included a random effect only, allowing the means of the happiness and health dependent variables across waves to vary between countries (i.e., to account for potential non-independence of responses within countries between waves, due to enduring cultural differences).

All group-level measures were matched by both country and year of data collection, and thus constituted level 2 effects. For each of the two dependent variables, Model 1 included main effects only for both individual characteristics (level 1) and shared country-level characteristics (level 2). In Model 2, cross-level interaction terms were then added between country-level variables and key individual-level variables. These interactions test whether the effects of individual-level characteristics on happiness and health change as a function of other variables that are shared at the country level. In addition, six 3-way interactions were included

[1] The two-way cross-level identity norm by identity interaction parameter for health was positive and significant ($p = .036$) in the ordinal model, whereas it was not significant in the continuous model presented in Table 3 ($p = .091$). However, the directionality was the same so this difference does not affect the interpretation of the corresponding three-way interaction.

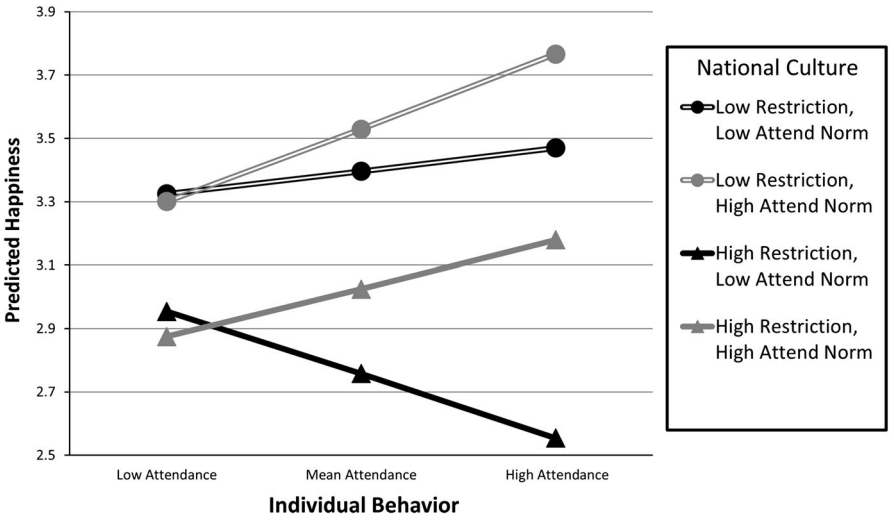


**Fig. 1** Illustration of country-level effects on the predicted relationship between religious attendance and happiness

in Model 2 to account for the possibility that the individual-level effects of attendance, religious identity, and importance of God are contingent upon interactions between government restrictiveness and country-level religious norms.

The assumption of linear mixed modeling that the outcome variable is continuous and normally distributed may be called into question because of the use of single item measures with relatively small response ranges for both happiness and health. To evaluate whether the results were distorted by this potential violation of assumptions we re-ran all models using generalized linear mixed modeling (with SAS PROC GLIMMIX) and applying a multinomial distribution with a cumulative logit linking function, a method that assumes the outcome variable consists of ordinal categories. Fixed effect results differed substantively for only one parameter out of the 68 reported in Tables 2 and 3, which did not substantially impact the interpretation of the results (see footnote 1). Thus, there is no evidence that the assumptions of the linear mixed modeling procedure were violated sufficiently to produce misleading results in this case, and because this procedure makes it possible to estimate the predicted mean values used to illustrate the complex interactions involved (see Figs. 1, 2, 3, 4, 5, 6), we report results of the linear mixed model, rather than the generalized linear mixed model.

## Results

Descriptive statistics for all variables used in the analyses are presented in Table 1. The grand mean level of happiness is relatively high (3.02 out of 4) as is overall physical health (3.78 out of 5). 52 % of the sample is female, the average age is

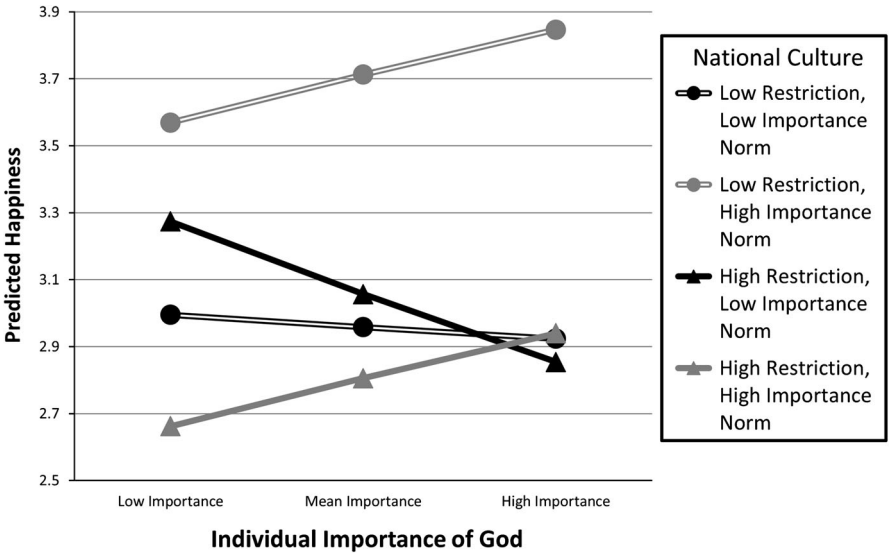


**Fig. 2** Illustration of country-level effects on the predicted relationship between religious importance and happiness

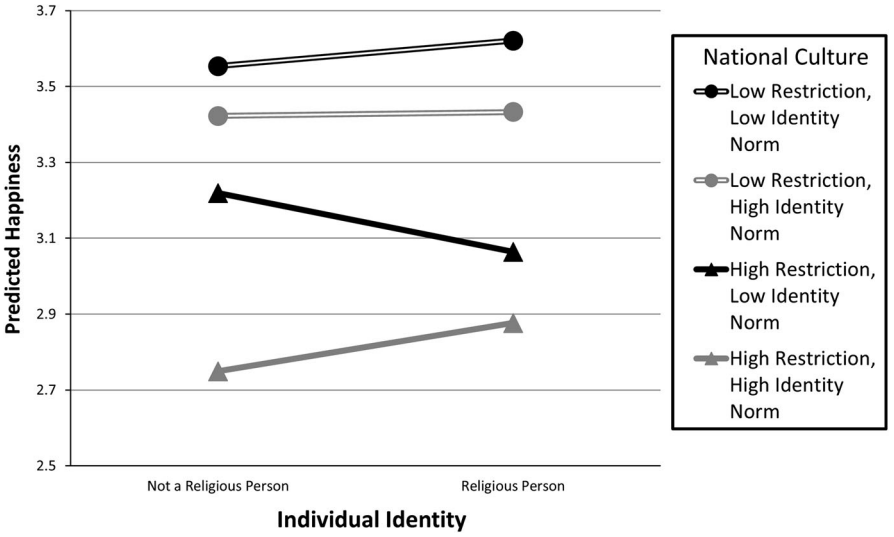


**Fig. 3** Illustration of country-level effects on the predicted relationship between religious identity and happiness

41.35, and average income falls close to the middle of the ten-point scale (4.65). Average attendance at religious services is 2.86 out of 6, seventy percent of the sample identifies as religious, and self-rated importance of religion is high (7.22 out of 10). Country-level averages for happiness and health are virtually the same as the individual averages. GDP per capita is a little over $10,000, ranging from a low of

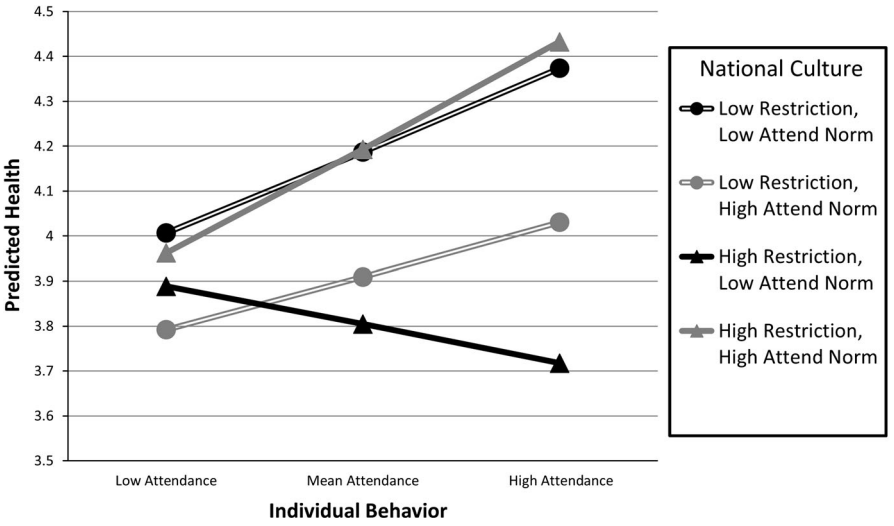


**Fig. 4** Illustration of country-level effects on the predicted relationship between religious attendance and health

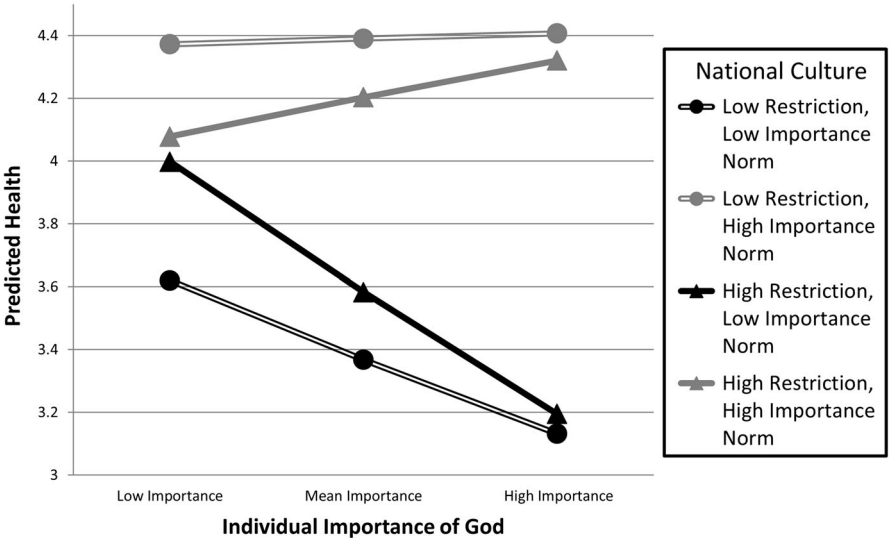


**Fig. 5** Illustration of country-level effects on the predicted relationship between religious importance and health

$174 to a high of $43,266. Average levels of government restrictiveness are about five on a scale from 2 to 14. Average levels of attendance, religious identity, and importance of God at the country level are very similar to the individual-level averages.

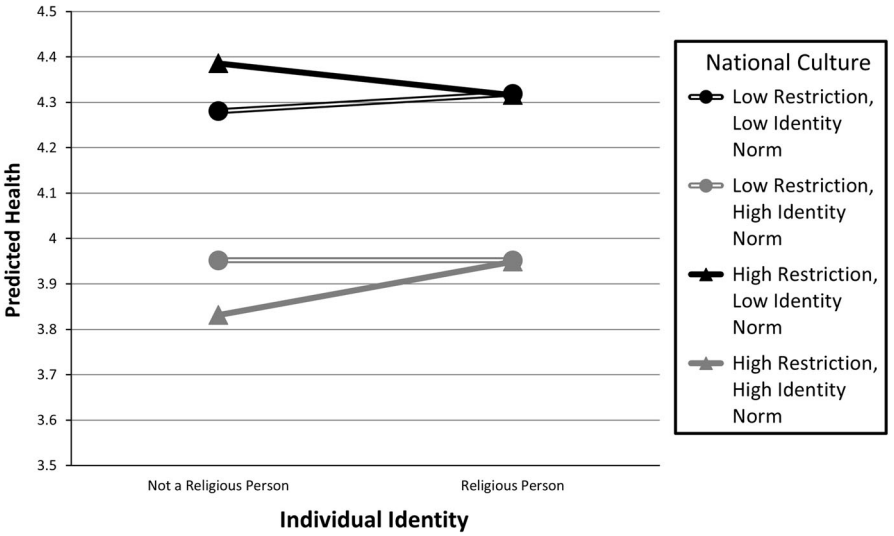


**Fig. 6** Illustration of country-level effects on the predicted relationship between religious identity and health

**Table 1** Descriptive statistics

| | N | Mean (%) | SD | Minimum | Maximum |
|---|---|---|---|---|---|
| *Individual* | | | | | |
| Happiness | 317,109 | 3.02 | 0.74 | 1 | 4 |
| Health | 280,437 | 3.78 | 0.91 | 1 | 5 |
| Female | 320,757 | 52 | | 0 | 1 |
| Age | 316,879 | 41.35 | 16.45 | 15 | 101 |
| Income | 280,071 | 4.65 | 2.44 | 1 | 10 |
| Religious attendance | 316,526 | 2.86 | 2.13 | 0 | 6 |
| Religious identity | 303,490 | 70 | | 0 | 1 |
| Importance of God | 313,009 | 7.22 | 3.20 | 0 | 10 |
| *Survey* | | | | | |
| Happiness mean | 221 | 3.03 | 0.28 | 2.26 | 3.58 |
| Health mean | 190 | 3.78 | 0.30 | 3.00 | 4.47 |
| GDP per capita | 221 | 10,120.16 | 10,898.06 | 174.01 | 43,266.18 |
| Government restriction | 221 | 5.09 | 3.32 | 2.00 | 14.00 |
| Attendance norm | 221 | 2.79 | 1.11 | 0.12 | 5.67 |
| Identity norm | 221 | 0.69 | 0.19 | 0.05 | 0.99 |
| Importance norm | 221 | 7.01 | 1.94 | 1.62 | 10.00 |

Statistics for untransformed variables, prior to multiple imputation of missing values

## Happiness

Linear mixed modeling results for happiness are presented in Table 2. Happiness was higher among women, among younger individuals, and among those with higher relative household incomes. In the main effects model (Table 2, Model 1) greater happiness was also associated with more frequent religious attendance, identification as a religious (vs. non-religious or atheist) person, and greater importance of God, measured by self-rated importance of God in one's life. At the country level, greater happiness was predicted by higher GDP, lower levels of government restriction, a smaller proportion of the country's population identifying as religious, and higher overall levels of importance of God.

In the interaction model, all possible two-way interactions, six of which are cross-level and two of which are between two country-level factors, are included so as to be able to test the three-way interactions. All six two-way cross-level interactions between country-level variables and key individual-level variables were significant, as were all three of the three-way interactions (Table 2, Model 2). There was also a significant reduction in the Bayesian Information Criteria between Model 1 and Model 2, indicating that adding the interaction effects explained more of the total variance in happiness than the main effects model alone. These complex associations reflective of the three-way interactions are depicted in Figs. 1, 2 and 3. Note that the figures represent predicted mean values illustrating the individual-level association of religiousness and happiness at given levels of country-level religious norm and governmental restriction, rather than observed means within specific subgroups. Furthermore, because all other model variables are held constant, the absolute magnitude of the predicted means can vary depending on which effect is illustrated and do not necessarily reflect the observed means in any specific country. For example, the predicted values presented here assume that GDP is constant, whereas in reality countries with low government restriction also tend to have higher GDP when compared with those with high levels of restriction; since GDP is also associated with happiness and health, the absolute differences between predicted national means may be smaller than the observed differences between two countries fitting the same profiles for freedom and religious norms would be.

Figure 1 presents the contingent effect of attendance at religious services on both government restriction and country-level attendance. Values in all figures are computed from Model 2, for the scale minimum and maximum levels of government restriction, and at mean, minimum, and maximum levels of the corresponding measure of religion. The positive effect of individual attendance on happiness exists in countries in which government restriction is low, regardless of the attendance norm, although the association is stronger when the attendance norm is relatively high. In fact, attendance is positively associated with happiness even in countries characterized by high levels of government restriction provided that the country-level attendance norm is high. It is only in highly restricted countries with low religious attendance norms that attendance at religious services is associated with greater unhappiness.

In Fig. 2, we see that when God is rated by the individual as relatively important, it is associated with greater happiness provided that God is relatively important in

**Table 2** Multilevel linear model for happiness (N = 317,089; 221 surveys; 88 countries)

| | Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|---|
| | *b* | (SE) | *p* | *b* | (SE) | *p* |
| Constant | 2.55 | 0.10 | <.001 | 2.58 | 0.10 | <.001 |
| *Level* 1 | | | | | | |
| Female | 0.01 | 0.002 | <.001 | 0.01 | (0.002) | .003 |
| Age[a] | −0.003 | 0.0001 | <.001 | −0.003 | (0.0001) | <.001 |
| Income[a] | 0.04 | 0.001 | <.001 | 0.04 | (0.001) | <.001 |
| Religious attendance[a] | 0.01 | 0.001 | <.001 | 0.02 | (0.004) | <.001 |
| Religious identity | 0.04 | 0.004 | <.001 | 0.11 | (0.02) | <.001 |
| Importance of God[a] | 0.01 | 0.001 | <.001 | −0.004 | (0.004) | .401 |
| *Level* 2 | | | | | | |
| GDP per capita x1000 | 0.01 | 0.002 | <.001 | 0.02 | (0.002) | <.001 |
| Government restriction | −0.02 | 0.005 | .001 | 0.04 | (0.02) | .024 |
| Attendance norm | 0.03 | 0.02 | .137 | 0.02 | (0.04) | .711 |
| Identity norm | −0.30 | 0.12 | .012 | −0.08 | (0.23) | .733 |
| Importance norm | 0.07 | 0.02 | <.001 | 0.11 | (0.03) | <.001 |
| *Cross-level interactions* | | | | | | |
| Two-way interactions | | | | | | |
| Restriction × attendance | | | | −0.004 | (0.001) | <.001 |
| Restriction × identity | | | | −0.02 | (0.003) | <.001 |
| Restriction × importance | | | | −0.002 | (0.001) | .001 |
| Attendance norm × attendance | | | | 0.004 | (0.002) | .009 |
| Identity norm × identity | | | | −0.12 | (0.03) | <.001 |
| Importance norm × importance | | | | 0.002 | (0.001) | <.001 |
| Restriction × attendance norm | | | | 0.002 | (0.01) | .787 |
| Restriction × identity norm | | | | −0.03 | (0.03) | .244 |
| Restriction × importance norm | | | | −0.006 | (0.004) | .150 |
| Three-way interactions | | | | | | |
| Restriction × attendance norm × attendance | | | | 0.0005 | (0.0002) | .029 |
| Restriction × identity norm × identity | | | | 0.03 | (0.005) | <.001 |
| Restriction × importance norm × importance | | | | 0.0002 | (0.0001) | .040 |
| BIC[b] | | | | 656,039.9 | | |

[a] Variables centered on survey mean

[b] Null model BIC = 720,590.0

the population as a whole, although overall levels of happiness tend to be lower in countries with higher levels of government restriction. However, when God is relatively unimportant to people in general in the given country, believing God is important to oneself is associated with greater unhappiness, especially when religion is highly restricted by the government. Thus, once again it is the combination of high restriction and a low importance of God norm that produces the greatest unhappiness, whereas the opposite is the case when there is low restriction and a high importance norm.

Figure 3 depicts the association between religious identity and happiness accounting for government restriction and the religious identity norm. Interestingly, the strongest positive association between religious identity and happiness, in this case, is when religion is highly restricted and normative. This may reflect the importance of private religiousness to well-being under conditions of government regulation of religious freedom, as was found by Elliott and Hayward (2009). However, these results build on their findings by indicating that a personal identity as a religious person under conditions of high government restriction only increases happiness when identification as a religious person is fairly common in one's country. Seeing oneself as religious when religious freedom is restricted and being religious is non-normative appears to result in greater unhappiness.

Thus far we have found that under conditions of high government restriction and low country-level religious norms, individual religiousness is associated with greater unhappiness regardless of how we measure religiousness. However, when the country-level religious norm is relatively high, the individual-level corollary measure is positively related to happiness, although predicted mean levels of happiness are lower overall when government restriction is high.

## Health

Linear mixed model results for health are presented in Table 3. Overall, better health was reported by men, by younger respondents, and by those with higher relative household income. The main effects model (Table 3, Model 1) indicated that better health was associated with more frequent religious attendance, but with lower importance of God, while being unrelated to religious identity. At the group level, mean health was better in wealthier countries, in countries with lower levels of government restriction, in countries where a small proportion of the population identified as religious, and in countries where relatively more people rated God as important.

In the interaction model (Table 3, Model 2) there was a significant reduction in the Bayesian Information Criteria between Model 1 and Model 2, indicating that adding the interaction effects explained more of the total variance in health than the main effects model alone. Once again, all three of the three way interactions were significant and their implications are depicted in Figs. 4, 5 and 6.

The contingent nature of the association between attendance and health on government restriction and country-level attendance (see Fig. 4) was quite similar to what we found for happiness: Provided the country-level attendance norm was high, attendance was associated with better health, although overall mean health was greater in countries that were less restrictive. In addition, attendance had the showed a most positive association with health even when the attendance norm was low, provided that government restriction was also low. However, when restriction was high and the country-level norm was low, attendance was associated with worse health.

The association between self-rated importance of God and health varied in a similar fashion to its association with happiness although the differences were more pronounced: when the overall religious norm was low, valuing God as important

**Table 3** Multilevel linear model for health (N = 280,417; 190 survey; 86 countries)

| | Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|---|
| | *b* | (SE) | *p* | *b* | (SE) | *p* |
| Constant | 3.45 | 0.11 | <.001 | | | |
| *Level* 1 | | | | | | |
| Female | −0.10 | 0.003 | <.001 | −0.11 | (0.003) | <.001 |
| Age[a] | −0.02 | 0.0001 | <.001 | −0.02 | (0.001) | <.001 |
| Income[a] | 0.05 | 0.001 | <.001 | 0.05 | (0.001) | <.001 |
| Religious attendance[a] | 0.02 | 0.001 | <.001 | 0.04 | (0.01) | <.001 |
| Religious identity | 0.01 | 0.005 | .139 | 0.06 | (0.03) | .026 |
| Importance of God[a] | −0.01 | 0.001 | <.001 | −0.03 | (0.01) | <.001 |
| *Level* 2 | | | | | | |
| GDP per capita (x1000) | 0.01 | 0.002 | <.001 | 0.01 | (0.003) | <.001 |
| Government restriction | −0.02 | 0.01 | .003 | 0.01 | (0.02) | .673 |
| Attendance norm | −0.03 | 0.02 | .223 | −0.07 | (0.05) | .186 |
| Identity norm | −0.45 | 0.15 | .003 | −0.31 | (0.30) | .294 |
| Importance norm | 0.10 | 0.02 | <.001 | 0.13 | (0.04) | <.001 |
| *Cross-level interactions* | | | | | | |
| Two-way interactions | | | | | | |
| Restriction × attendance | | | | −0.004 | (0.001) | <.001 |
| Restriction × identity | | | | −0.01 | (0.004) | .005 |
| Restriction × importance | | | | −0.002 | (0.001) | .008 |
| Attendance norm × attendance | | | | −0.004 | (0.002) | .053 |
| Identity norm × identity | | | | −0.08 | (0.05) | .091 |
| Importance norm × importance | | | | 0.003 | (0.001) | <.001 |
| Restriction × attendance norm | | | | 0.01 | (0.01) | .412 |
| Restriction × identity norm | | | | −0.02 | (0.04) | .585 |
| Restriction × importance norm | | | | −0.004 | (0.005) | .419 |
| Three-way interactions | | | | | | |
| Restriction × attendance norm × attendance | | | | 0.001 | (0.0002) | .003 |
| Restriction × identity norm × identity | | | | 0.02 | (0.01) | .010 |
| Restriction × importance norm × importance | | | | 0.0003 | (0.0001) | .018 |
| BIC[b] | | | | 679,247.6 | | |

[a] Variables centered on survey mean

[b] Null model BIC = 768,841.9

predicted worse health, especially in highly restricted environments (Fig. 5). However, when the overall norm was high, those who rated God as relatively important tended to have better health, but more so as government restriction increased. In addition, overall predicted mean values for health were higher in less restrictive environments.

Finally, we found a similar pattern of associations between religious identity and health to those of religious identity and happiness: the positive association between

identifying privately as a religious person and health was most pronounced in environments in which government restriction was high but identifying as a religious person was relatively normative (Fig. 6). However, when relatively few people identified as religious and government restriction was high, religious identity predicted worse health.

## Discussion

Religion is not positively associated with health and happiness the world over. In fact, the individual-level association between various aspects of self-reported religiousness and happiness or health depends in part on the social environment in which it operates. In support of our hypotheses, and in keeping with previous research (Diener et al. 2011; Okulicz-Kozaryn 2010; Elliott and Hayward 2009), we found that two key country-level characteristics are associated with the extent to which religion and well-being are related at the individual level: government regulation and cultural religious norms. Furthermore, the present results indicate that these characteristics are contingent upon one another in determining how healthful, or harmful, religiousness is for the individual. It is true that in most instances, religion and well-being are positively associated. However, the strength of the association tends to increase as religion becomes more normative, and overall levels of health and happiness are lower when government regulation is high. The magnitude of these effects varies depending on the facet of religion in question and the type of well-being outcome, but in general it appears that high regulation tends to intensify the contrast between the effects of fitting in with or deviating from the religious norms of the nation. Note that the sizes of differences in predicted values tend to be especially large between countries as a function of norm deviance. For example, individuals reporting high importance of God are separated by more than one standard deviation in terms of both happiness and health, depending in part on whether they live in societies where the mean importance of God is high or low (see Figs. 2, 5). Within-society differences between high and low religiousness individuals tend to be somewhat smaller but remain meaningful, with magnitudes of effect around half a standard deviation in the outcome.

The worst case scenario, as predicted by the model, is when government restriction is high and religion is culturally non-normative. In these contexts, people who are religious, whether they attend religious services, rate God as very important in their daily lives, or personally identify as religious apart from any formal religious affiliation, tend to be less happy, and have worse health, than their non-religious counterparts. Few countries within the World Values data base fit the description of having both high government regulation and low cultural religiousness but most share one thing in common: they are currently or formerly communist. Vietnam and China stand out as fitting this pattern, and several former Soviet republics (e.g., Belarus) and former states of Yugoslavia (e.g., Serbia and Montenegro) have a similar profile. People who do attempt to practice religion in such contexts may suffer from government repression as well as public ostracism owing to the combined disadvantages of limited religious freedom and lack of community support for

religious practice. Although relatively little research regarding religion and well-being has been conducted in societies fitting this profile, our model fits well with findings from China that religious participation is related to worse subjective well-being among older adults (Brown and Tierney 2009).

Most countries that are highly regulated (e.g., Ethiopia, Iran, and Pakistan) are also fairly religious wherein overall level of happiness and health are comparatively low, yet religion is associated with greater happiness and better health. Perhaps in such contexts religion serves as a coping resource that allows individuals hope and peace in an otherwise repressive environment. When everyday life is tightly structured by government regulations and ordinary citizens enjoy few rights, belief in the transcendent may be a primary source of comfort and relief. To the extent that these governments enforce official favoritism of the majority religion, they may also promote the perception of universal religious consensus within the national community, allowing religious believers to experience the kind of "sacred canopy" of existential consensus discussed by Berger (1967). If official sanction strengthens community ties by promoting participation and putting up barriers to leaving the majority religion, it may also have effects on well-being as described by the moral community hypothesis (Graham and Haidt 2010). Conversely, regulation favoring particular religious groups may lead to discrimination against those with low levels of religious commitment, which may also influence the apparent magnitude of the effect of religiousness in these environments.

Religious freedom alone appears to provide the conditions for religion to benefit well-being, but less so in places where fewer people are religious, such as Sweden or Norway. Presumably in relatively secular societies, although individuals enjoy the freedom to express their beliefs as they see fit, they do not enjoy the same sense of belonging as a function of their religion because in being religious they are relatively deviant. In these highly secular environments, believers may be especially likely to experience identity threat based on their religion, as the result of either genuine or perceived discrimination from the non-religious majority. Some recent studies have reported that while religiousness helps to buffer against the impact of perceived discrimination based on other minority identities, it can exacerbate the negative effects of discrimination based specifically on one's religious identity (Friedman and Saroglou 2010; Jasperse et al. 2012; Ysseldyk et al. 2011).

In contrast, optimum conditions for experiencing the potential health benefits of religion appear to exist in countries such as the US where religious freedom is celebrated and levels of religious practice are quite high. Therein, individuals may freely choose how to express their religious inclinations as well as enjoy widespread social approval in doing so. Consequently, this study suggests that research on religion and well-being based on US samples cannot necessarily be generalized to other parts of the world, because it takes for granted the two conditions that we have found, worldwide, to make religion particularly healthful: religious freedom and widespread religiousness. When either factor is absent, the association between religion and well-being is attenuated, and when both are lacking, those who are religious are actually less happy and healthy than their non-religious counterparts.

The limitations of this study include the country-level measures which probably do not exhaust all aspects of national level freedom and religiousness that may

modify the connections between religion and well-being. Other possible influences may include religious heterogeneity and history of religious conflict. Secondly, although the data cover a long period of time, they are not longitudinal within individuals, so causation remains unclear. It is possible that relatively healthy, happy people are more likely to be drawn toward social engagement in religious activities, which may reinforce the importance of religion in their lives. It is also possible that unhappy or unhealthy people are more likely to turn to religion to find solace when it is non-normative and highly regulated. Likewise, happiness and perceptions of health may influence one another in complex ways that cannot be determined using cross-sectional data. National religious norms may be less important in contextualizing the individual experience of religion than regional or community norms, as there may be considerable differences within countries in the salience and importance of religion. More research is needed to determine at what level these norms have the greatest impact. Finally, the constructs used to represent religiousness may take on different meanings in different cultural settings. In particular, one of the items used in this study referred to the importance of God, which is likely to be less relevant as an indicator of religious commitment among, for example, Buddhists than among Christians or Muslims. Similarly, different norms regarding worship attendance may prevail between religious groups as a function of different prescribed practices. Future research can help to address these shortcomings by examining a broader range of elements of social norms and governmental factors that may have an impact on how religion is related to well-being, by including regional and local levels of analysis in addition the national level, and by including measures of religiousness that more comprehensively capture the particular facets of belief and participation important in a broader range of religious traditions.

The importance of the larger community in defining the social reality of religion has been clearly articulated in classic theoretical works from Durkheim (1995) to Berger (1967). The empirical study of the impact of religion on health and well-being, however, has largely neglected this perspective, focusing almost exclusively on individual and interpersonal processes. In demonstrating how this relationship varies cross-nationally as a function of broad social norms and levels of regulation, this study reveals some ways in which those individual processes are culturally bound and constrained by elements of social structure. More integration between the individual and social levels of analysis is called for in order to more completely understand the situations in which religion may enhance or harm health and well-being.

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