Religious participation and health: A global comparative study (Extended abstract)

Introduction and hypotheses

Demographic analyses have pointed to longevity advantages accrued to the most frequent participates of religious activity[1-5]. Common mechanisms through which participation impacts health are thought to be those associated with behaviors, social support networks and psychological factors such as the influence of religion on coping and stress[6, 7]. Also, particularly with older persons, some of the association is thought to be reverse since healthier people are physically abler to make their way to a place of worship. A drawback of this past literature is that it has been largely concentrated in Western countries and there have been few if any comparative investigations that test the universality across borders. As such, past literature may be overlooking intricacies in the association that manifest across contexts. Religiosity is, after all, a complicated construct that is conceptualized and practiced differently around the world. At the very least, variations in the ways in which religiosity is expressed may mean that different mechanisms lead from religiosity to health across different environments.

Close examination of literature from a cross-section of disciplines, including psychology, political science and sociology, provide reason to believe that benefits of religion may in fact depend upon idiosyncratic within-country socioeconomic, political and historical circumstances [8-10]. To be brief for the purposes of this extended abstract, this literature suggests that, first, religion is most beneficial in countries where individuals have the greatest independence and freedom in choosing whether and which religion to practice and frequency of practice, and where there is the greatest societal tolerance for religious expression. In these environments, participation is selective toward healthier people, and adherents select religious activities due in part to the salutary support and psychological advantages they receive. Second, religiosity is most efficacious in environments where religion has historically been practiced over time and across generations and therefore is part of the fabric of society. The opposite are places where religious expression has been suppressed and adherents tend to be new recruits. In the latter instance, those seeking religion tend to come from, and may in fact be recruited from, the least satisfied, unhealthiest and least fortunate segments of society that have the most to gain from any relief or reprieve obtained through religious experience.

This literature leads to the following hypotheses that are tested in the current analysis using a comparative international framework.

- *Hypothesis 1:* The fundamental relationship between religious participation and health is positive.
- *Hypothesis 2:* The magnitude of the association is stronger within national contexts that offer tolerance and choice in whether to pursue religious practice, which practice to pursue, and the frequency of engaging religious activity, and within national contexts that are characterized by a continuity of religious values over several generations.

Three measures are used as indicators of national contexts. The first is the *Human Development Index* (HDI), an indicator of socioeconomic development. It is proposed that more economically developed and socially stable countries allow greater latitude in choosing religious activities. The second is a measure of *religious homogeneity* (RH). Homogeneous landscapes are traditional and restraining and are therefore likely to be less tolerant toward selection of religious activity. The third measure is an indicator of whether a country is currently or has recently been governed by a *communist system of governance* (CG). In these environments, religious adherents are new recruits selected because of poor physical and psychological health.

Methods

Data: The study tests hypotheses across 94 countries using data from waves 3 to 6 of the World Values Survey (WVS), conducted between 1995 and 2014. Four waves allow for inclusion of all countries that include questions on religiosity that have ever taken part in the WVS. Data comes from the most recent wave conducted in that country. The analysis is conducted using 122,929 individuals, with the majority coming from the most recent wave collected between 2011 and 2014.

Measures: **Health (SAH)** is measured using the single available health question asked consistently across all countries and waves of the WVS, which is a self-assessed health item categorized into five possible responses: excellent, very good, good, fair and poor.

Religious participation (RP) comes from a question that is asked consistently across all countries and waves: "Apart from weddings and funerals, about how often do you attend religious services these days?" with seven response categories ranging from more than once a week to never. Responses are standardized across respondents to have a mean of zero and a standard deviation of one.

Country level measures used to test hypotheses are as follows:

2A) Human Development Index (HDI) scores obtained from UNDP are based on the year in which the data for a country was collected. HDI scores range from 0 to 1, but are standardized for this analysis to have a mean of zero and standard deviation of one.

2B) Religious homogeneity (RH) is the percent adhering to the country's most dominant religion. For these data this ranges from 100% to 29%. This variable is also standardized as noted above.

2C) Communist system of governance (CG) is coded according to the CIA World Factbook. Countries coded 1 have communist governments or were part of the former Soviet Union, eastern bloc or Balkan countries. Other countries are coded as 0.

Analysis: The core of the analysis is based on ordered logit mixed effects modeling. A series of nested models estimate SAH considering: 1) Fixed effects for standardized religious participation score (RP), adjusting for age, age-squared and sex; 2) A random effect for the SAH intercept across countries and a random slope for the effect of RP across countries; 3) Cross-level interactions between RP and country-level indicators that test the hypotheses listed above.

Results

For the purpose of this extended abstract, three results are presented. *Figure 1* shows log odds ratios for the association between RP and SAH within 94 countries from separate ordered logit regression models. The preponderance of association is positive, but they vary greatly from strongly positive to strongly negative. For instance, associations are very strong, significant and positive in Cyprus, Ethiopia and Philippines; very strong, significant and negative in China, Pakistan and Iraq; near zero in Bulgaria, Vietnam and Chile.

Hypotheses are tested in *Table 1*, which show mixed effects ordered logit results for five nested models. Summarizing briefly, results indicate that the religious homogeneity and new recruit hypotheses are supported. The underlying association between RP and SAH is positive, but the association is muted in countries where there is religious homogeneity and in communist and former communist countries. The random intercept indicates that SAH differs significantly across countries and the random slope indicates that the association between RP and SAH varies significantly across countries.

Figure 2 uses results from Model 5 in Table 1, plus random effects, to show the probability of excellent health by religious participation in the 10 most populous countries of the world. These 10 are illustrative because they represent a range of country-level characteristics, including communist and high and low levels of religious homogeneity. A very strong positive association between RP and SAH is obvious in the U.S., which is consistent with much of the research on religion and health derived from U.S. data. But, negative associations are seen in Pakistan and in China. In some countries, like Russia and Bangladesh, the probability of excellent health is flat across levels of religious participation.

Conclusion

While the preponderance of the association between religious participation and health is positive, our paper demonstrates enormous variability. The findings suggest that the religion – health nexus is complex and there is a need for demographers to rethink mechanisms that link these two constructs within an international comparative framework. The conclusion will further discuss the implications of these findings and directions for future research.

Figure 1: Ordered regression log odds ratios showing 94 within country relationships between religious attendance and self-assessed health*
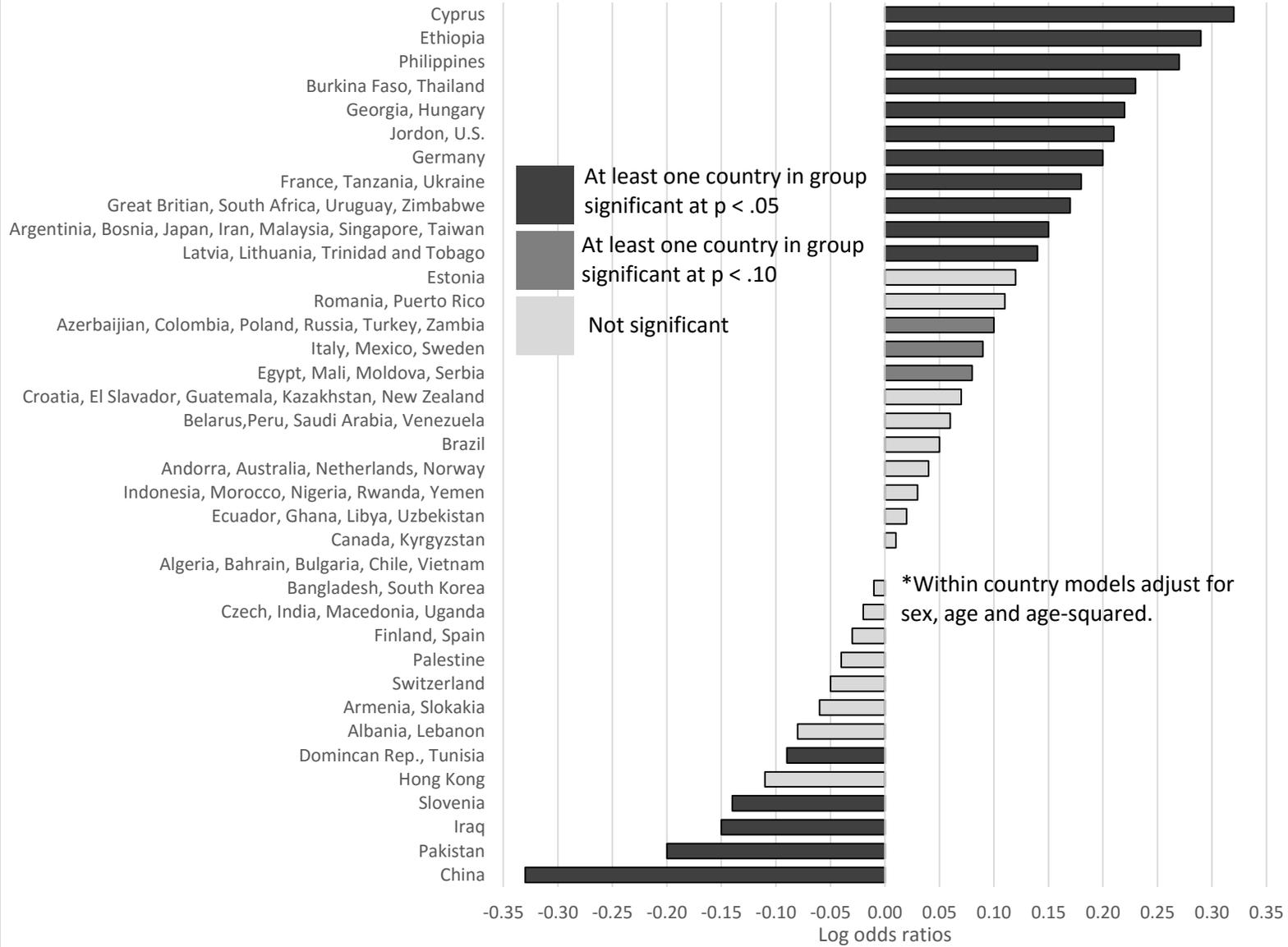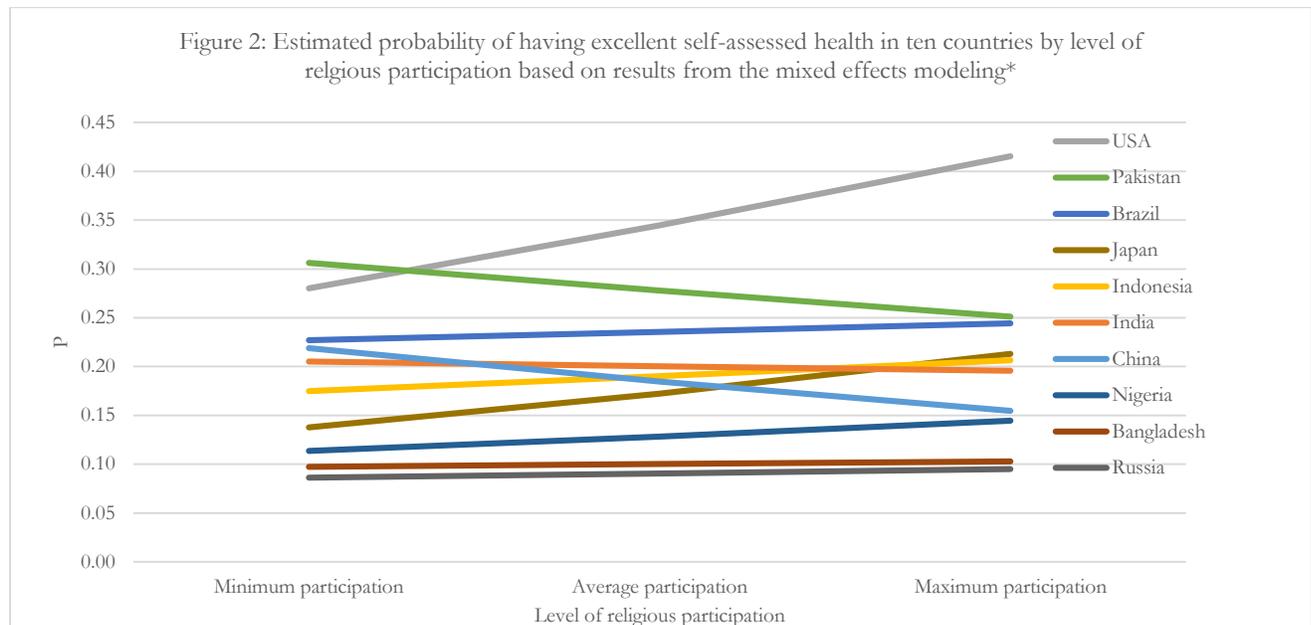
*Within country models adjust for sex, age and age-squared.

At least one country in group significant at p < .05

At least one country in group significant at p < .10

Not significant

Table 1: Mixed effects ordered logit results predicting self-assessed health (SAH) in 94 countries

	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed components					
Individual-level					
Religious participation (RP)	.056***	.052***	.057***	.071***	.073***
Female	-.226***	-.226***	-.227***	-.225***	-.226***
Age	-.029***	-.029***	-.029***	-.029***	-.029***
Age^2	-.0001**	-.0001***	-.0001**	-.0001**	-.0001**
Country-level					
Human development index (HDI)		.189***			.179***
Religious homogeneity (RH)			-.199***		-.104***
Communist system of governance (CG)				-.770***	-.773***
Cross-level interactions					
RP X HDI		-.003			
RP X RH			-.032***		-.031***
RP X CG				-.063***	-.060**
Intercepts					
Cut_1	-4.574	-3.622	-4.583	-4.792	-4.799
Cut_2	-2.415	-1.463	-2.424	-2.632	-2.640
Cut_3	-.211	.741	-.219	-.428	-.436
Random components					
Random intercept	.369***	.333***	.332***	.250***	.195***
Random slope: SRP	.0075***	.0067***	.0063***	.0068***	.0056***
LL	-138,441.4	-138,439.7	-138,432.2	-138,419.9	-138,404.4

Figure 2: Estimated probability of having excellent self-assessed health in ten countries by level of relgious participation based on results from the mixed effects modeling*

* Based on Model 5 from Table 1.

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