ISSN 1413-389X **Temas em Psicologia - 2012, Vol. 20, no 1, 101 – 120**

Is it smart to believe in God? The relationship of religiosity with education and intelligence

Gerhard Meisenberg
Ross University Medical School – Dominica

Heiner Rindermann
Chemnitz University of Technology – Germany

Hardik Patel
Michael A. Woodley
Ross University Medical School – Dominica

Abstract

The relationship of religiosity with education and intelligence was investigated with data from the World Values Survey covering a total of 345,743 respondents in 96 countries. The individual-level relationship of education with religious belief was slightly but significantly negative in the majority of countries, although its relationship with religious attendance was substantially less negative. At the country level, religious belief has independent negative relationships with intelligence and a history of communist rule, but not with educational exposure and log-transformed GDP. The results suggest that a weak negative relationship of religiosity with education is culturally amplified into far larger differences at the country level, and that the effect of education is mediated by cognitive skills. The results suggest that secularization during the 20th century has been driven by cognitive rather than economic development.

Keywords: Religiosity, Education intelligence, Wealth, GDP, Cross cultural comparisons.

É inteligente acreditar em Deus? A relação da religiosidade com educação e inteligência

Resumo

A relação da religiosidade com educação e inteligência foi investigada de acordo com dados do *World Values Survey* abrangendo um total de 345.743 entrevistados em 96 países. No nível individual, a relação da educação com a crença religiosa foi discretamente, porém significativamente negativa na maioria dos países, apesar de que a relação com a presença religiosa foi substancialmente menos negativa. No nível nacional, a crença religiosa tem relações negativas independentes com inteligência e com um histórico de regime comunista, mas não com a exposição educacional ou com o produto interno bruto (PIB) obtido por transformação logarítmica. Os resultados sugerem que uma fraca relação negativa de religiosidade com educação é culturalmente amplificada para diferenças muito maiores no nível nacional, e que o efeito da educação é mediado por habilidades cognitivas. Os resultados sugerem que a secularização durante o século XX tem sido impulsionada pelo desenvolvimento cognitivo e não pelo desenvolvimento econômico.

Palavras-chave: Religiosidade, Educação inteligente, Bem-estar econômico, PIB, Comparações transculturais.

Address for correspondence: *Prof. Dr. Gerhard Meisenberg, Hardik Patel & Michael A. Woodley* – Department of Biochemistry, Ross University Medical School, Picard Estate, Dominica. Tel. 767-255-6227. E-mail: GMeisenberg@rossmed.edu.dm. *Prof. Dr. Heiner Rindermann* – Department of Psychology, Chemnitz University of Technology, Wilhelm-Raabe-Str. 43, D-09107 Chemnitz, Germany. Tel. +49 371 531 38715, Fax +49 371 531 838715. E-mail: heiner.rindermann@psychologie.tu-chemnitz.de

Es inteligente creer en Dios? La relación de la religiosidad con educación e inteligencia

Resumen

La relación de la religiosidad con la educación e inteligencia se investigó de acuerdo con datos del *World Values Survey* cubriendo un total de 345,743 entrevistados en 96 países. A nivel individual, la relación de la enseñanza con la creencia religiosa fue baja, pero significativamente negativa en la mayoría de los países, aunque esta relación con la presencia religiosa fuera considerablemente menos negativa. A nivel nacional, la creencia religiosa tiene relaciones negativas independientes de la inteligencia y un histórico de régimen comunista, pero no con la exposición educacional o con un Producto Interno Bruto (PIB) obtenido por transformación logarítmico. Los resultados sugieren que una débil y negativa relación de la religiosidad con la educación es culturalmente ampliada en diferencias muy grandes a nivel nacional, y que el resultado de la educación es medido por capacidades intelectivas. Los resultados apuntan que la secularización durante el siglo XX ha sido impulsada más por el conocimiento que por el desarrollo económico.

Palabras clave: Religiosidad, Educación inteligente, Bienestar económico, Educación, PIB, Comparaciones transculturales.

Introduction

According to Blaise Pascal (1670/2008, §83), a rational person should believe in God. If God does not exist, it does not matter whether or not you believe in God. However, if God exists, you can gain eternal life by believing and eternal damnation if you don't. We cannot know whether God exists, but because there is a certain (possibly low) probability of His existence, it is safer to believe. Bertrand Russell (1927) disagreed with Pascal's wager. His (attributed) conclusion was: "Religion is something left over from the infancy of our intelligence; it will fade away as we adopt reason and science as our guidelines." These two views make opposite predictions: If Pascal was correct and religious belief is to be preferred by rational people, religiosity will have a positive relationship with measures of education and/or intelligence; if Russell was right in seeing religion as the symptom of an undeveloped mind, the relationship will be negative.

Historically, the European countries have experienced a slow erosion of religious participation and religious belief that started, among intellectuals, during the Enlightenment of the 18th century and became a mass phenomenon during the 20th century. It is not obvious which aspect of modernity has driven the secularization process. It might be the rising standard of living, the spread of non-religious systems of thought by mass education (Schofer & Meyer, 2005), or the rise in intelligence that occurred during most of the 20th century (Flynn, 1987; Lynn & Hampson, 1986) and that has most likely been a consequence of educational expansion.

In developing and emerging countries religion is still very important in daily life. For instance this could be observed in Brazil, where many, more or less radical Protestant free churches are growing (e.g. Igreja Pentecostal Deus é Amor), within the Catholic church "unspoilt", pre-modern habits like votive offering are practiced (e.g. in the Church of Nosso Senhor do Bonfim, Salvador), and beneath these churches or mixed with the African cults (Macumba, Candomblé) are alive. International statistics, where Brazil has comparatively high indexes on religiosity (e.g. God is important for life, in Brazil for 98%, in Europe around 40 to 60%, Being very religious, in Brazil 67%, in Europe around 40 to 50%), underscore such observations (Huntington, 2004; see also Table 1).

Numerous studies have investigated the relationship of formal education with measures of religious belief and religious participation. The most frequent conclusion was that there is a mild negative relationship between education and religion (Johnson, 1997). However, the results depend on the measure of religious belief or involvement, and positive relationships between religion and education have been reported with some regularity. In the United States, higher education is associated with more frequent religious attendance although it appears to decrease religious belief

(Glaeser & Sacerdote, 2008). The authors assumed a causal effect of education on religious participation. They attributed the positive relationship to the generally greater sociality of more educated people. However, other authors attributed the positive relationship between education and religious attendance among American Protestants to an effect of religiosity on education (Lehrer, 2004). This interpretation is supported by the observation that religious attendance at age 14-17, before the end of schooling, predicts educational attainment measured 14 years later (Loury, 2004). In the latter study, this effect persisted even after controlling for several background variables.

Most of these studies used samples from industrialized western countries with a Christian religious tradition. It is not known to what extent their results generalize to less developed countries and different religious traditions. A study of Muslims in Indonesia found that the use of religion in daily life ("functional religiosity") increased with increasing educational level (Tamney, 1980). A (marginal) positive relationship between education and measures of religiosity has also been observed among Catholics in Spain (Branas-Garza & Neuman, 2004). In the United States, a positive association between religiosity and education was found for Mormons (Albrecht & Heaton, 1984; Merrill, Lyon, & Jensen, 2003).

Education can be an easily measured proxy (Spence, 1973), or a cause (Rindermann & Ceci, 2009) for high cognitive ability, which in turn makes people more likely to use intelligent reasoning in most domains of their lives. Intelligence conceived either in the Piagetian (e.g. Piaget, 1947; Oesterdiekhoff & Rindermann, 2007) or psychometric framework (Rindermann, 2008, 2009; Rindermann & Meisenberg, 2009) leads to greater rationality. For religious belief this can mean that it will either lose many of its less rational elements or, to the extent that religion is almost by definition a non-rational system of convictions, it will lead to less religiosity (Anonymous, 1716/2009; Lynn, Harvey, & Nyborg, 2009; Oesterdiekhoff, 2007, 2009).

The present study examines the relationship between cognitive measures and religious belief with data from the *World Values Survey*. Several waves of this survey have been conducted between 1981 and 2009, and 96 countries and territories participated in at least one wave. The numbers of respondents and countries are large enough for correlational studies at the individual as well as the country level.

The following hypotheses were investigated.

1. In concordance with the secularization hypothesis, which postulates a weakening of religious influence with "modernization" (Weber, 1905/1930; Inglehart & Baker, 2000), religious belief is hypothesized to be negatively related to measures of education and intelligence at both the individual and the national level (Steppan, 2010).
2. Cognitive rather than economic factors are the more important determinants of religious belief at both the individual and national level, as proposed by Lynn et al. (2009).
3. The effect differs by religion. Religions with a positive attitude to critical thinking, especially Protestantism and Judaism, are more attractive to educated people, leading to a more positive relationship of religiosity with measures of education or intelligence (e.g. Murray, 2007). For religions with a recent history of intellectual rigidity, especially Islam and to some extent Catholicism, the relationship is expected to be more negative (Nyborg, 2009; Rindermann, 2006).
4. In addition to cognitive factors, the average level of religiosity in a country will be affected by historical and institutional factors. Specifically, we postulate that (1) a history of communist rule reduces religiosity independent of the educational or intellectual level of the population; (2) in more dysfunctional societies, operationalized by corruption in our study, people will turn to religion as an escape from the harsh realities of life; and (3) competition between religious groups favors high religiosity because it forces religion providers to adapt to people's psychological needs, as proposed by Stark and Iannaccone (1994). Therefore communist rule, corruption, and sectarian diversity were used as control variables in the country-level analyses.

Method

Data about religiosity are from the World Values Survey (WVS) Official Aggregate v.20090901, 2009, available free of charge at www.worldvaluessurvey.org. Data are from

355,298 respondents in 96 countries and territories. The WVS is the largest survey of its kind. Its great advantage is its broad coverage of all "cultural provinces" of the world. Its main disadvantage is the poor representativeness of many country samples, which is especially striking for education (see below).

Additional sources for the current level of religiosity include a single question about the importance of religion in the Gallup World Poll of 2011 (https://worldview.gallup.com/signin/login.aspx?ReturnUrl=%2f) and a listing of atheism rates in Zuckerman (2005). Because these data are based on smaller samples and do not allow individual-level analyses, we used them only for calculating a sum variable drawing a world-wide map of religiosity for 157 countries (see Figure 2).

The following variables were derived from the WVS:

1. *Religious denomination*. Denominations were categorized into Catholics, Protestants (including mainline and evangelical denominations), Orthodox Christians, Jews, Muslims, Hindus, Buddhists and other East Asian philosophies and religions (Taoism, Confucianism), "Pagans" (for example those practicing ancestor worship), and the Unaffiliated.

2. *Religious attendance*. This is a single item with 7 options ranging from "never" to "more than once a week", available for 333,620 respondents.

3. *Religious belief*. This variable was computed from four questions that had been asked in all or nearly all countries: (1) "...would you say you are: A religious person – Not a religious person – A convinced atheist?" (2) "Do you believe in God? Yes/No/Don't know." (3) "How important is God in your life? – 10-step scale from 'not at all important' to 'very important.'" (4) "Do you find that you get comfort and strength from religion? Yes/No/Don't know." Correlations between these four items (Pearson's r) ranged from *r*=.58 to .73. In cases of missing data, the score was extrapolated from the available items. A score could be computed for 345,743 respondents.

4. *Education*. This is a composite variable that was calculated from (a) the age at which formal education ended or (for young respondents) is expected to end; and (b) highest educational degree, from no schooling to university degree. The correlation between these two measures was *r*=.69. For respondents who were missing one of the two variables, the score was extrapolated from the available measure. A score could be computed for 344,460 respondents.

5. *Income*. Self-rated relative household income was available on a 1-to-10 scale for 307,530 respondents.

World regions were defined similarly to Inglehart, Basáñez, Díez-Medrano, Halman and Luijkx (2004). "Protestant Europe" was defined as the traditionally Protestant countries of northern Europe, except Britain. "English-speaking countries" include the British Isles and those overseas nations with a mainly European-origin, English-speaking population. "Catholic Europe & Mediterranean" contains the Catholic countries of southern Europe and also Greece, Cyprus and Israel. "Middle East" refers to the predominantly Muslim countries from Morocco to Pakistan; "Africa" includes only countries of sub-Saharan Africa. Because of the great cultural differences between different racial/ethnic groups in Africa (Lynn, 2008), in those countries where the question was asked, only those classifying themselves as "Black" were used in the individual-level analyses. "South (+ Southeast) Asia" is a heterogeneous group of countries ranging from India to the Philippines. "East Asia" consists of countries with predominantly Confucian culture: China, Japan, Hong Kong, South Korea, Taiwan and Singapore.

The following country-level variables were used:

1. *Intelligence* was defined as the average of two variables:

(1a) Average IQ in the country based on the compilation of Lynn and Vanhanen (2006), with the extensions and amendments reported in Lynn (2010). This "Greenwich IQ" is defined with an average of 100 and standard deviation of 15 for Britain. Measured IQs are available for 136 countries, including 80 countries in the WVS. For 58 additional countries the average IQs were estimated from the IQs of neighboring countries with similar population, culture, and economic development. For example, the average IQ in Afghanistan was assumed to be the same as the average IQ in the Northwest Frontier Province of Pakistan (Ahmad, Khanum, Riaz, & Lynn, 2008).

(1b) School achievement based on average scores on standardized school achievement tests. Scores were calculated (in the IQ metric) primarily from the 8th-grade TIMSS assessments in mathematics and science in 1995, 1999, 2003 and 2007, and the PISA assessments of 13-year-olds in 2000, 2003 and 2006. Missing data were extrapolated into this data set from other international scholastic assessments as described in Lynn and Meisenberg (2010). Scores are available for 108 countries, including 80 countries in the WVS. The correlation between school achievement and IQ is .917 for the 86 countries having both measures (Lynn & Meisenberg, 2010; Rindermann, 2007). For countries that did not participate in any of the international school assessments, scholastic achievement was estimated from the arcsine-transformed averages of the adult literacy rates in 1990 and 2002 (United Nations, 2004).

The *Intelligence* sum score was finally computed as the average of measured IQ and school achievement for the 69 countries in the WVS having both measures, measured IQ alone (11 countries) or school achievement alone (11 countries) for those having one of the two measures, and the average of estimated IQ and literacy rate for the 5 countries having neither a measured IQ nor measured school achievement.

2. *Education* is a composite measure for exposure to formal schooling. It was calculated from four data sets: (1) Average years of schooling for adults over the age of 25 from the Barro-Lee dataset (www.cid.harvard.edu/ciddata/Appendix%20Data%20Tables.xls) for the year 2000, or extrapolated from the latest available date. (2) School life expectancy for the year 1999 (or extrapolated from earliest available date) from UNESCO at http://stats.uis.unesco.org/TableViewer/tableView.aspx. (3) Combined gross enrolment ratio for primary, secondary and tertiary schools in 2002 (United Nations, 2005). (4) Arcsine-transformed averages of the adult literacy rates in 1990 and 2002 (United Nations, 2004). Measures (1) and (2) were averaged, missing data were extrapolated from measure (3), and the remaining missing data were extrapolated from measure (4).

This measure of average education in the country is different from the average education of samples in the World Values Survey described above. The correlation between education in the World Values Survey and country-level education is only r=.49 (N=94 countries), mainly because the WVS oversampled educated people in many of the less developed countries.

3. *lgGDP* is the logarithm of gross domestic product adjusted for purchasing power, averaged for the years 1990-2005, from the World Development Indicators of the World Bank.

4. *Corruption* is calculated as the average of the corruption score published by Transparency International at www.transparency.org, average of the years 1999-2005, and the corruption score published by the Heritage Foundation at www.heritage.org/research.

5. *Freedom* is defined as the scores of political freedom (political rights + civil liberties) from Freedom House at www.freedomhouse.org/research/freeworld, averaged over the years 1988-2005.

6. *Democracy* is defined as Vanhanen's democracy index, average 1990-2004, from the Finnish Social Science Data Archive at www.fsd.uta.fi/english/data/catalogue/FSD1289. *Freedom* and *Democracy* were highly correlated (r=.85, N=179 countries), and in most analyses were averaged into a single *Freedom/Democracy* variable.

7. *Sectarian Diversity* is defined in Meisenberg (2007). This measure includes distinctions between different groupings within the major world religions (e.g., Catholics versus Protestants).

All statistical analyses were done with SPSS software.

Results

Table 1 and Figures 1 and 2 show that contemporary *Homo sapiens* is a remarkably religious species. Scaled to a zero-to-ten scale, the average score for religious belief is 7.72. This demonstrates that the vast majority of the world population has at least some kind of religious belief, and most can be considered highly religious. Religious belief is highest in the countries of the Middle East and Africa, and lowest in East Asia and Protestant Europe. Thus religious belief tends to vary inversely with levels of cognitive and economic development.

In regression models for all respondents (*N*=328,327), the average religiosity in the country accounts for 28.6% of the total variance in religious belief. Gender accounts for 2.3% of the total variance, and age for 2.1%. In most countries, women are more religious than men and religiosity rises with increasing age (or older cohort). Education reduces religiosity in a majority of countries, but accounts for only 0.3% of the worldwide variance in religiosity. This calculation assumes that the effects of sex, age and education are the same throughout the world.

Table 1 – Levels of religious belief, religious attendance and education in the World Values Survey, each on a zero-to-10 scale.

Region	*N* countries	Religious belief	N	Religious attendance	N	Education	N
Prot. Europe	8	6.18	38835	2.96	38305	5.17	37631
Cath. Eur. / Med.	12 (11)	7.27	40888	4.37	39465	4.49	39776
English	7	7.60	32583	4.61	30960	5.03	32408
Ex-communist	23	7.14	83857	3.93	79936	5.16	80081
Latin America	13	8.78	43479	5.77	44983	4.66	44717
Middle East	9	9.33	36124	5.33	33311	3.97	36206
South(east) Asia	7 (6)	8.36	22157	6.55	20856	4.50	22152
East Asia	6	5.57	17334	3.54	18174	5.02	21118
Africa	11	9.25	23509	7.76	22368	4.25	23423
World	96 (94)	7.72	345743	4.77	333620	4.77	344460

Note: Information about religious attendance is unavailable for Israel (lumped with "Catholic Europe and Mediterranean") and Malaysia (classified as "South and Southeast Asia").

Figure 1 – Level of religiosity in 96 nations (shaded in gray). Darker shading indicates higher religiosity; hatched areas indicate that no data were available. Source World Values Survey 2009

Figure 2 – Level of religiosity in 159 nations (shaded in gray). Darker shading indicates higher religiosity; hatched areas indicate that no data were available. Sources are World Values Survey (2009), Gallup (2011), and Zuckerman (2005)

Table 2 shows the partial correlations of education with religious belief and attendance, controlled for gender and age, and with dummy-coding used to control for country-level effects. The relationship of education with religious belief is negative in all world regions except sub-Saharan Africa, but its relationship with religious attendance is consistently more positive than its relationship with religious belief.

Table 2 – Partial correlations (p.c.) of education with religious belief and religious attendance, with country, sex and age controlled

	Religious belief		Religious attendance	
Region	***p.c.***	***N***	***p.c.***	***N***
Prot. Europe	-.038	37406	$.004_{NS}$	37067
Cath. Eur. / Mediterranean	-.082	39641	$-.002_{NS}$	38239
English-speaking	-.047	32076	.033	30491
Ex-communist	-.105	79012	-.057	76022
Latin America	-.060	39077	-.011*	41113
Middle East	-.094	35736	-.034	32939
South/Southeast Asia	-.035	22073	.061	20776
East Asia	-.042	14802	$.003_{NS}$	15852
Africa (Blacks)	.042	22591	.050	21522
World	-.053	328327	$.000_{NS}$	318336

Note: * $p<.05$; $_{NS}$ non-significant. All other partial correlations are significant at $p<.001$; p.c.: partial correlation.

Education is positively related to income in virtually all societies (partial correlation $r_p=.29$, $N=295{,}268$, controlled for gender, age and country). This raises the possibility that the partial correlations between education and religious measures in Table 2 are secondary to a relationship of religion with wealth or income. In this case religiosity should be related more closely to income than to education. Table 3 shows that when religious belief is predicted jointly by education and income, education is the more important in most world regions.

The partial correlations of Tables 2 and 3 do not distinguish between religious denominations. Table 4 shows that worldwide,

the relationship between education and religiosity is negative in all groups except Protestants. Jews have the most negative relationship. The partial correlation is r_p=-.14 for Jews in the Diaspora (N=823) and r_p=-.24 for Jews in Israel (N=986).

Table 3 – Partial correlations of religious belief with education and income

Region	*p.c.* education	*p.c.* income	N
Prot. Europe	-.043***	.017**	32231
Cath. Eur. / Mediterranean	-.087***	-.003	30582
English-speaking	-.038***	-.034***	26637
Ex-communist	-.089***	-.040***	71685
Latin America	-.052***	-.010	35282
Middle East	-.077***	-.045***	32004
South/Southeast Asia	-.035***	.016*	19731
East Asia	-.041***	.017*	13629
Africa (Blacks)	.040***	-.009	19885
World	-.045***	-.022***	286769
World excluding Africa	-.051***	-.022***	266884

Note: Sex, age and country are controlled. * p<.05; ** p<.01; *** p<.001; p.c.: partial correlation.

Table 4 – Mean religious belief and educational level (both on a scale from zero to 10) and partial correlation (p.c.) between education and religious belief, by religious denomination

Religion	Belief	Education	*p.c.*	*N*
Catholic	8.49	4.62	-.025***	97832
Protestant	7.88	5.02	.024***	55710
Orthodox	8.30	5.20	-.088***	30486
Muslim	9.27	4.19	-.053***	50878
Jew	7.82	5.55	-.215***	1809
Hindu	8.57	4.28	-.057***	8486
Buddhist	6.96	4.70	-.023	5852
Pagan	5.49	4.12	-.043	1656
Unaffiliated	4.70	5.18	-.078***	46489

Note: Sex, age and country are controlled. *N* values are for the partial correlations. *** p<.001. All other partial correlations are non-significant (p>.05).

Differences between religions in average religiosity and the religiosity-education correlation can be caused by country characteristics. For example, most Muslims live in countries with low economic and cognitive development, and most Christians live in more advanced societies; and Buddhists/Confucians are confined to the countries of East Asia and Southeast Asia.

To control at least partially for the influence of wealth and cognitive level, we compared religions within the same world regions. Table 5 shows the results. The first observation is that the unaffiliated have not only the expected low levels of religious belief, but they also tend to be more educated than members of the majority religion(s), at least in world regions with Christian or Muslim majorities. In these regions, the unaffiliated also show a substantial negative relationship between religiosity and education. The main exception is tropical Africa, where the unaffiliated are less educated than the Christians and have a positive relationship between religiosity and education.

The high educational levels of the unaffiliated and their negative relationship between religiosity and education explain part of the overall negative relationships between religiosity and education in Tables 2 and 3. Nevertheless, Table 5 shows that only Protestants have frequent positive associations between education and religious belief, at least in the English-speaking countries, Europe, and Asian countries. Usually the relationship is more positive (or less negative) for Protestants than Catholics living in the same country or world region. In the ex-communist countries of Eastern Europe, however, the relationship is negative for all religions.

Table 5 – Mean levels of religious belief and educational level (both on scales from zero to 10), and partial correlation (p.c.) between education and religious belief in different world regions, by religious denomination

Region/religion	Belief	Education	*p.c.*	*N*
Protestant Europe				
Protestant	6.58	5.20	.021**	21719
Catholic	7.75	4.82	.013	6034
Unaffiliated	3.69	5.22	-.045***	6015
Cath. Eur./Mediterranean				
Catholic	8.03	4.23	-.022***	27656
Orthodox	8.32	5.88	-.090***	1602
Jew	8.01	5.69	-.262***	1057
Protestant	8.03	4.62	.022	486
Unaffiliated	4.01	4.88	-.098***	6176
English-speaking				
Protestant	7.95	5.01	.057***	11466
Catholic	8.54	4.87	-.022*	10426
Unaffiliated	5.50	5.15	-.126***	3956
Excommunist				
Orthodox	8.26	5.23	-.091***	26966
Catholic	8.21	4.84	-.075***	19127
Muslim	8.61	5.01	-.111***	6363
Protestant	7.70	4.98	-.056**	2515
Unaffiliated	4.35	5.42	-.070***	19479
Latin America				
Catholic	9.11	4.64	-.022***	26567
Protestant	9.20	4.52	-.026	4119
Unaffiliated	7.04	4.91	-.128***	4170
Muslim Middle East				
Muslim	9.38	3.97	-.077***	30585
Protestant	9.48	4.34	.056	422
Unaffiliated	8.35	4.82	-.148***	771
South/Southeast Asia				
Hindu	8.50	4.22	-.060***	7306
Muslim	9.35	4.84	.007	6978
Catholic	9.15	5.01	.037	2344
Buddhist	7.19	3.85	-.002	2246
Pagan[+]	4.82	4.09	-.017	1071
Unaffiliated	5.57	4.46	-.001	818
East Asia				
Buddhist	6.67	5.06	-.031	3136
Protestant	8.55	5.99	.038	995
Muslim	9.43	4.45	-.105**	641
Catholic	7.38	6.11	-.014	621
Pagan[++]	6.41	4.85	-.114*	432
Unaffiliated	4.00	5.14	-.045**	4006
Africa (Blacks only)				
Protestant	9.45	4.60	.017	9696
Catholic	9.35	4.42	.001	4406
Muslim	9.46	3.36	.044**	4725
Unaffiliated	7.34	4.15	.114**	764

Note: Sex, age and country are controlled. Sample sizes (*N*) are for the partial correlations. * $p<.05$; ** $p<.01$; *** $p<.001$. [+] Mainly Vietnamese practicing ancestor worship. [++] Mainly Taiwanese practicing ancestor worship. P.c.: partial correlation.

Another observation is that the eastern religions (Hinduism, Buddhism/Confucianism) inspire less religiosity than Christianity and Islam. This is shown by the low religiosity of East Asian Buddhists, and by the lower religiosity of Hindus (mainly in India) relative to South Asian Muslims (mainly in Malaysia, Indonesia and Bangladesh). Within India, the average religiosity score is 8.47 for Hindus (*N*=6937) and 8.89 for Muslims (*N*=761). This difference is significant at $p<.001$.

Because a large fraction of the individual variability in religiosity worldwide is explained by the average religiosity in the country, the determinants of average religiosity were investigated at the country level. Table 6 shows that country-level religiosity is negatively related to all "development indicators". The relationship is strongest for intelligence, less for exposure to education, and even less for log-transformed GDP, democracy, corruption, and political freedom. Interestingly, the average educational level of the samples interviewed in the World Values Survey is only mildly related to religiosity although the average educational level in the country is a strong predictor. This means that in comparisons between countries the relationship between education and religion is not a direct effect of more educated individuals being less religious. More likely, a high *average educational level in the country* is related to a less religious culture, which in turn reduces the religiosity of people at all educational levels. The strength of individual religious belief appears to depend on the average religiosity of others, in the same way that cognitive abilities develop according to the average ability levels in a person's social environment (Rindermann & Heller, 2005).

Another observation in Table 6 is that sectarian diversity is not a strong correlate of religious belief. This observation weakens the economic argument that competition among religious groups leads to better "customer service" by established churches and thereby to stronger religious affiliations (Stark & Iannaccone, 1994).

Figure 3 shows that the relationship between intelligence and religiosity is non-linear. There is no indication for a negative relationship among countries with average IQs below 85. At higher IQs, however, religiosity declines with increasing intelligence. This non-linear fit explains 60.5% of the country-level variance in religiosity. The average educational level in the country was the second best predictor, with the best non-linear fit explaining 37.2% of the variance.

The effects of the alternative predictors were further explored in regression models. Table 7 shows that approximately 60% of the variance in religiosity between countries is predicted by a combination of economic, cognitive, political and religious variables. Model 1 points to intelligence, corruption, and a history of communist rule as significant predictors. To reduce the considerable collinearity that follows from the high correlations between the predictors (Table 6), model 1 was simplified by eliminating sequentially the poorest predictors, aiming at a model with the highest adjusted R^2. Although intelligence is a powerful predictor, neither model shows any religiosity-reducing effect of educational exposure.

To take account of the nonlinear nature of the intelligence effect, the centered and squared term for intelligence (intelligence^2) was added alongside the linear effects. The resulting models 3 and 4 show improved fit, as seen in their higher R^2. Now the only significant effects are the linear and nonlinear effects of intelligence, and the effect of communist history.

Table 6 – Correlations of religiosity with several predictors at the country level

	Religiosity	Int.	Edu	Edu wvs	lgGDP	Freedom	Democ.	Corr.
Intelligence	-.725							
Education	-.592	.808						
Edu in wvs	-.215	.319	.486					
lgGDP	-.518	.796	.877	.301				
Pol. Freedom	-.380	.519	.702	.191	.760			
Democracy	-.500	.663	.793	.292	.822	.880		
Corruption	.464	-.621	-.723	-.146	-.817	-.741	-.717	
Sectarian Div.	-.119	-.292	-.183	-.018	-.267	-.147	-.194	.045

Note: *N*=92 countries. Edu in wvs, average educational level of the samples interviewed in the World Values Survey. Correlations above .205 are significant at $p<.05$.

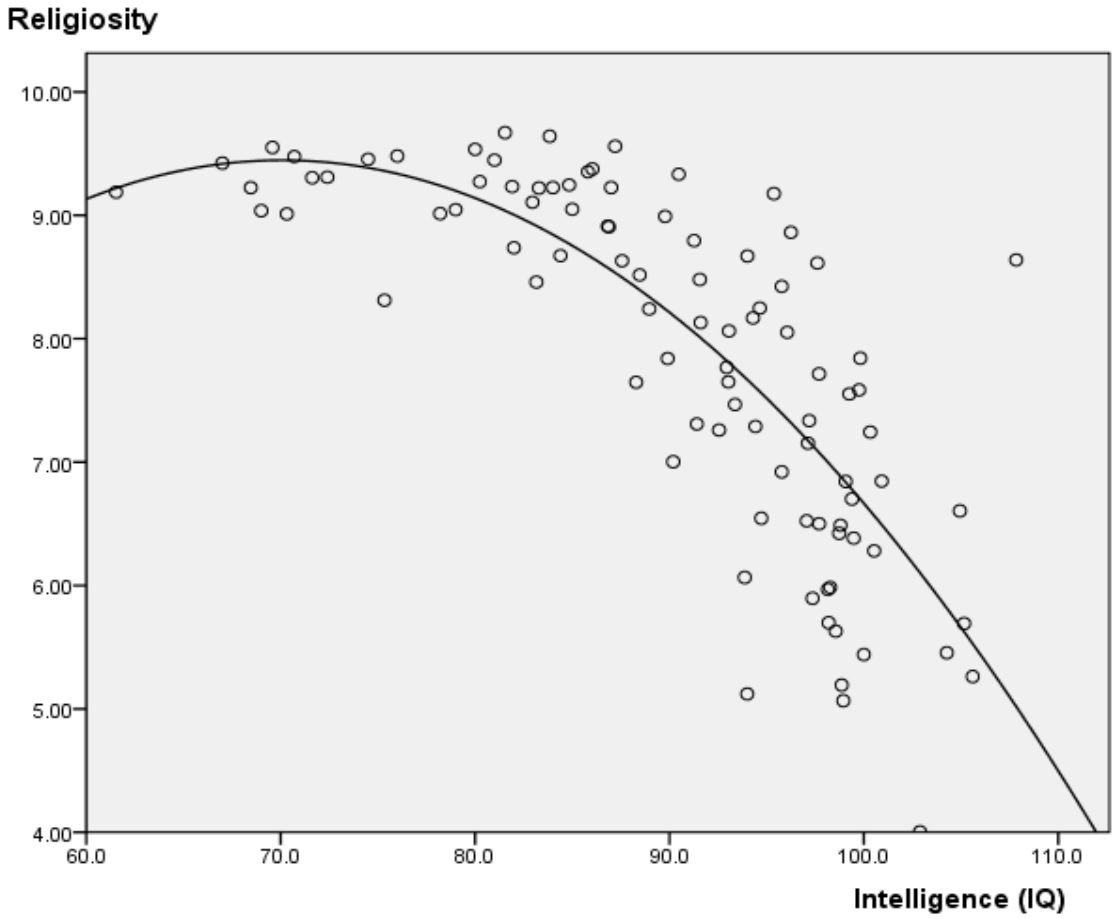

Figure 3 – Relationship between religiosity and intelligence at the country level. *N*=94 countries. R^2 for this non-linear fit is .605

Table 7 – Regression models predicting country-level religiosity

Predictor	Model 1	Model 2	Model 3	Model 4
Intelligence	-.609***	-.599***	-.583***	-.590***
Intelligence^2			-.279**	-.288***
Education	.051		-.090	
lgGDP	.249	.228	.186	
Corruption	.351*	.397**	.122	
Freedom/Democr.	-.118		.128	-.143
Sect. Diversity	-.028		.056	
Communism	-.319**	-.306**	-.286**	-.281***
N countries	92	93	92	93
R^2	.607	.610	.657	.654
Adjusted R^2	.575	.592	.624	.638

Note: Standardized β coefficients and significance levels are shown. * p<*.05;* ** p<*.01;* *** p<*.001*.

The effects in Table 7 might be due to spatial autocorrelation, defined as the regional clustering of societal traits. If, for example, all countries of sub-Saharan Africa are both unusually religious and show unusually low intelligence, the effect of intelligence might well disappear once "Africa" is introduced as a control variable. Another possibility is cultural

autocorrelation. For example, if by chance Buddhism elicits low religiosity and Buddhism happens to be widespread in the countries with the highest intelligence, the use of "Buddhism" as a control variable will attenuate or eliminate the effect of intelligence (Eff, 2004).

Table 8 shows that this is not the case. In model 1, only the dummy-coded world regions (with "South & Southeast Asia" as the omitted comparison) are included. Although the proportion of variance explained is impressive, it falls short of the values in the models of Table 7. Model 2 includes both the world regions and the predictors of model 3 in Table 7. Now the effects of the world regions are small and insignificant, and only intelligence emerges as a significant predictor. This result is confirmed when non-predictors other than the world regions are eliminated with the aim of maximizing the adjusted R^2 (model 3). The rather high R^2 of model 1 can be attributed to the fact that about 85% of the worldwide variation of country-level intelligence, and 57% of the variation in religiosity, is explained by differences between rather than within world regions.

Models 4 to 6 in Table 8 explore cultural autocorrelation. There are indeed systematic differences between religions. Countries with high proportions of Catholics or Muslims tend to be more religious than those with a large Buddhist population. The positive signs for the religions in model 4 derive from the fact that the religions are compared mainly with the percentage of unaffiliated individuals. Model 5 adds the "standard" predictors to the religions, and model 6 simplifies model 5 by eliminating non-predictors. Intelligence and a history of communist rule emerge as the most significant predictors, with weaker effects of sectarian diversity that are in the expected direction. Nevertheless, differences between religions remain even with these other variables controlled. The importance of religious denomination is evident by comparing the R^2 and adjusted R^2 values of models 5 and 6 in Table 8 with the corresponding values in models 3 and 4 of Table 7. These models confirm the earlier observation that Muslims and Christians (with the exception of Protestants) tend to be more religious than Hindus and Buddhists/Confucians.

Table 8 – Regression models predicting country-level religiosity with world region or religious denomination

Predictor	*Model 1*	Model 2	Model 3	Model 4	Model 5	Model 6
Intelligence		-.813***	-.722***		-.491**	-.440***
Intelligence^2		-.320*	-.243		-.118	-.154*
Education		-.179			.119	
lgGDP		.144			.070	
Corruption		-.163			.077	
Freedom/Democr		.033			-.180	-.122
Sect. Diversity		.066			.164*	.160*
Communism					-.317**	-.295**
Protestant Europe	-.378***	-.135	-.063			
Catholic Europe	-.182	.023	.071			
English	-.138	.058	.121			
Excommunist	-.272*	-.010	-.049			
Latin America	.144	.038	.084			
Middle East	.229*	.133	.159			
East Asia	-.398***	.113	.074			
Africa	.248*	-.012	.022			
% Catholic				.603***	.470**	.454**
% Protestant				.201	.056	.058
% Orthodox				.304*	.333**	.321**
% Muslim				.823***	.431**	.418**
% Hindu				.187*	.096	.081
% Buddhist				.019	.073	.078
N countries	96	92	96	96	92	93
R^2	.566	.658	.660	.396	.729	.727
Adjusted R^2	.526	.591	.621	.355	.679	.689

Note: Standardized β coefficients and significance levels are shown. * p<.05; ** p<.01; *** p<.001.

The nonlinear relationship between country-level intelligence and religiosity shown in Figure 3 suggests that within countries, the education-religiosity relationship is negligible at the lowest IQs but becomes increasingly negative at average country IQs above about 85.

Table 9 shows that this is indeed the case. The religiosity-education relationship tends to be more negative in more advanced countries: those with higher intelligence, higher economic productivity (GDP), and democratic government. Further investigation showed that the relationships are clearly nonlinear for two of the variables in Table 9: religiosity and intelligence. In both cases, the religion-education relationship is most negative at intermediate values of the variable. Figure 4 shows that in the case of intelligence, the relationship is negligible or positive at country IQs below 80 (mainly African countries), scattered around zero at IQs above 100 (mainly East Asian countries), and mainly negative at IQs between 80 and 100.

Table 9 – Correlation of predictor variables with the partial correlation (p.c.) between religiosity and education

	Correlation with the religiosity-education p.c.	
Predictor	**All countries**	**Non-communist**
Religiosity	.191	.105
Intelligence	-.346**	-.373**
Education	-.215*	-.203
lgGDP	-.211*	-.373**
Corruption	-.008	.212
Freedom/Democracy	-.169	-.325**
N (countries)	92	67

Note: With country, sex, age and survey year controlled, shown separately for all countries and for countries without communist history only.

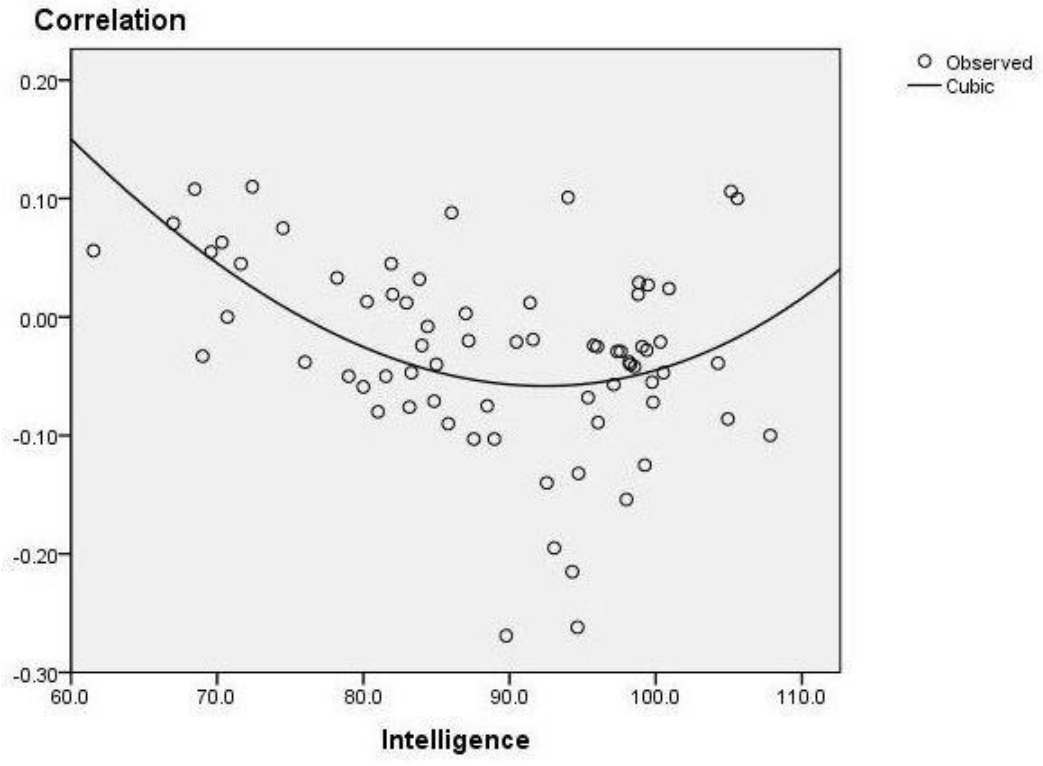

Figure 4 – Prediction of the partial correlation between religiosity and education in the 71 countries without communist history. The best-fitting non-linear relationship is shown

Discussion

The results of this study present us with a paradox. Within countries, the relationship of religiosity with education is very weak. The partial correlation between education and religious belief is positive in 25 countries, negative in 70 countries, and zero in one. Within countries, the effect of education (either positive or negative) accounts for an average of only .65% of the variance in religiosity. Educational effects were nevertheless significant at $p<.05$ in 69 of the 96 countries, in all but 12 of them with a negative sign. These results confirm and extend earlier reports of a negligible relationship between intelligence and religiosity in advanced societies (Francis, 1998), where even highly educated groups have fairly high levels of religious belief (Gross & Simmons, 2009), but contradicts other reports showing a negative correlation (reviewed in Lynn et al., 2009).

In comparisons between countries, however, religious belief declines sharply with rising education and, especially, intelligence. Allowing for nonlinear relationships, intelligence alone explains as much as 60.5% of the average religiosity in the country. How can this paradox be resolved?

First, we need to examine in which way the effects of intelligence on religious measures differ from those of educational exposure. Like most other pertinent surveys, the World Values Survey has no measures of intelligence that could be compared with schooling measures as predictors of religiosity. Therefore we have to consult external evidence from surveys in which both intelligence and education were assessed. Such data are available for only a few countries.

One major source for the United States is the National Longitudinal Study of Youth (NLSY). Information about religious attendance is available for 1979, when the respondents were 14 to 22 years old, and for 2000 (age 35 to 43). Intelligence was measured with the Armed Services Vocational Aptitude Battery (ASVAB) in 1980. For non-Hispanic white respondents, the partial correlations of church attendance (averaged for 1979 and 2000) are r_p=.26 with length of schooling, r_p=.25 with highest educational degree, and r_p=.16 with intelligence (N=3825). Sex and age are controlled in this analysis.

Another source for the United States is the General Social Survey (GSS), which includes more than 45,000 subjects since its inception in 1972. In this survey the partial correlations (controlled for sex, age and survey year) of religious attendance with years in school, highest educational degree, and intelligence for non-Hispanic white respondents are r_p=.09, r_p=.09, and r_p=.01, respectively (N=17,558). For strength of religious affiliation, these correlations are r_p=.01, r_p=.02, and r_p=-.04, respectively (N=16,543). In regression models with both predictors, schooling raises and intelligence lowers the scores for religious attendance and strength of religious affiliation. The effect of intelligence is most likely underestimated because the only measure of "intelligence" in the GSS is a 10-item vocabulary test. In the World Values Survey, the partial correlation (age, sex and survey year controlled) for Whites in the United States is r_p=.10 between education and church attendance and r_p=-.05 between education and religious belief (N=2950).

Thus both the NLSY and the GSS show that in the United States, the relationships of the religious measures are less positive, or more negative, with intelligence than with schooling. It is uncertain whether and to what extent this observation generalizes to other advanced societies. If so, the unmeasured effects of intelligence would be more negative than the measured effects of schooling in the World Values Survey.

Interpretation of these results is complicated by the possibility of religion affecting education. Studies in the United States have shown repeatedly that religiosity during adolescence precedes high educational attainment and therefore is more likely a cause, rather than a consequence, of educational attainment (Lehrer, 2004; Loury, 2004).

Another observation that replicates between the GSS and the World Values Survey and that seems to be a cross-cultural universal is the more positive relationship of education with religious attendance than with religious belief (Table 2). The most likely reason is that higher education makes people more inclined to participate in responsible activities of most kinds. In the World Values Survey, higher education is associated with membership and volunteer work in social welfare organizations, human rights groups, labor unions, political parties and many other voluntary associations.

In accordance with Glaeser and Sacerdote's (2008) conclusions for the United States, the global near-zero relationship between education and religious attendance (last row in Table 2) is best explained by postulating a slight negative effect of education on religious belief and a slight positive effect on social charity action, which both contribute to church attendance. In addition to the NLSY and the GSS, other studies have found mildly positive relationships between education and church attendance in the United States (Mueller & Johnson, 1975).

Researchers need to be aware that religious attendance is an imperfect proxy for religious belief. In the World Values Survey, the average within-country correlation between religious belief and religious attendance is only r=.48 (N=327,125 respondents). Nor is education a perfect measure of intelligence. For non-Hispanic Whites in the NLSY, the correlation of intelligence is r=.63 with highest grade and r=.59 with highest degree (N=5788).

There are nevertheless important differences in the education-religiosity relationship between countries, world regions, and religions. In the least developed world region, sub-Saharan Africa, this relationship is more often positive than negative. Although unusual in today's world, this result confirms the anthropological observation that elaborated religion plays a minor role in many simple, small-scale societies. Religious belief and ritual both increase with rising cultural complexity (Zern, 1984). Indeed, before the birth of modern science, the major world religions offered the most sophisticated explanations of the human condition and of natural, psychological and social phenomena in general.

A study of two age groups (aged 18-25 and 51-62) in an Afro-Caribbean population found an "African" pattern, with higher religiosity among more educated respondents (Meisenberg, Lawless, Lambert, & Newton, 2006). In the young group the partial correlations of religious belief (age and gender controlled) were r_p=.04 with education and r_p=.13 with intelligence (N=365). In the old group, these partial correlations were r_p=.04 and r_p=.16, respectively (N=341). Intelligence was measured with a vocabulary test and the non-verbal Raven test, and the effects of intelligence were statistically significant (p<.05 and p<.01, respectively). In this study the average IQ was estimated at 61 in the old group and 73 in the young group, which is similar to the IQs reported for countries in sub-Saharan Africa (Lynn, 2010; Lynn & Vanhanen, 2006). This suggests that the pro-religious effect of education on African religiosity in Tables 2 and 3 is mediated by intelligence.

Figure 4 shows that negative education-religion relationships prevail at average population IQs between 80 and 100. This is best explained by competition between scientific and religious worldviews. At this level of cognitive development the most sophisticated sections of the population are likely to endorse scientific explanations, while the less educated prefer religious explanations. This conflict is also visible in the evolution-creation debate today, which divides the public not only in the United States (Berkman, Pacheco, & Plutzer, 2008; Scott, 1997), but in parts of Europe (Curry, 2009), the Muslim world (Hameed, 2008), and other countries (Fulljames & Francis, 1988).

Positive relationships between education and religious belief become again more common at the highest stages of cognitive development. Sweden, the United Kingdom, Hong Kong and South Korea all have significantly positive relationships between education and religious belief. One plausible explanation is that at this level of cognitive development, the most educated or intelligent sections of the population are able to construct reasons for those irrational beliefs that satisfy their emotional needs, are socially desirable, or promote their career ambitions. This phenomenon is known as the "clever sillies" hypothesis (Charlton, 2009; Woodley, 2010).

Specifically, many intellectuals assign scientific and religious explanations to separate domains: Science for explaining the material world and as the foundation for technology; and religion to give meaning to life and for ethical guidance (Gould, 1997). Religion is assigned to a realm in which rational analysis is either off limits, or is applied to axioms that are not supported by observation and are, in this sense, irrational. This separation of domains allows highly intelligent people to enjoy the emotional rewards of religion without abandoning their rational belief in science.

The separation of cognitive domains can explain the repeated finding that students and practitioners of the applied sciences (medicine, accounting, chemical engineering, primary education) tend to be more religious, and that religiosity is lowest among psychologists and

social scientists (Gross & Simmons, 2009; Lehman, 1974; Leuba, 1921; Thalheimer, 1973; Vaughan, Smith, & Sjoberg, 1966). The application of rational analysis to humans, especially with the purpose of understanding fundamental issues rather than solving specific problems, is inimical to religion because it encroaches on a domain that most people reserve for religion. The applied sciences favor the non-use of reason in human affairs by focusing rational analysis on problem solving in emotionally irrelevant domains.

A more specific reason for a positive education-religiosity relationship is found in some East Asian countries, which have been importing Christian religions during the last decades. In South Korea, for example, Buddhists have an average religiosity score of 6.1; Catholics 6.8; and Protestants 8.3. The education score is 5.6 for Buddhists, 6.2 for Catholics, and 6.4 for Protestants. In this case the intrusive western religions took hold primarily among the educated, presumably because the educated tend to be more open-minded (Ashton, Lee, & Vernon, 2000) and are more likely to adopt innovations of many kinds, including a new religion. The greater attractiveness of the western religions may result not only from the promise of eternal life for the believers, but also from their internally consistent, dogmatic teachings that complement the equally dogmatic and internally consistent teachings of science.

Table 5 shows that in most of Europe and the English-speaking countries overseas, Catholicism supports higher religiosity than Protestantism but also has a more negative (or less positive) relationship with education (Becker & Wößmann, 2009). In these countries, Protestantism appears to be more adapted than Catholicism to the educated classes, but at the cost of lower population-wide religiosity. This supports the observation of Glaeser and Sacerdote (2008) that the educated gravitate toward "low-belief" religions.

In Latin America and the Far East, however, Protestants are more religious than Catholics. The likely explanation is that Latin America and the Far East are recruiting grounds for Evangelical churches, most of them based in the United States. Although lumped with the mainline Protestant churches in the present study, Evangelicals tend to have higher religiosity (Glaeser & Sacerdote, 2008) and greater missionary fervor than mainline Protestants, giving them an advantage at the missionary frontiers.

Of all major world religions, Islam has the most negative relationship between religiosity and education. It appears that unlike Christianity, which had to adapt to the rational mindset of the educated since the Enlightenment of the 18th century, Islam has not yet developed forms of dogma and worship that are adapted to cognitive modernity.

The unaffiliated form a substantial fraction of the population in Protestant Europe (16.1%), Catholic Europe and the Mediterranean (15.6%), the English-speaking countries (12.3%), the ex-communist countries (24.7%), Latin America (10.7%), and East Asia (27.1%). The unaffiliated always have low religiosity. With the exception of sub-Saharan Africa and some Asian countries they also have a negative correlation between religiosity and education (Table 5).

A likely reason for the relatively high average education of the unaffiliated is that highly educated non-believers who are born into a religious group are more likely than poorly educated non-believers to become unaffiliated. By removing highly educated non-believers from religious denominations, this process can contribute to the formation of a positive education-religiosity relationship *within* religious groups. The literature contains many examples of clear-cut positive education-religiosity relationships within specific religious groups such as Mormons (Albrecht & Heaton, 1984; Merrill et al., 2003) and conservative Protestants (Lehrer, 2004) in the United States.

Education explains only .3% of the variability in religious belief worldwide, but country of residence explains more than 28%. The impact of the average religiosity in the country is only a lower-bound estimate for "cultural" influences, for there are more and less religious milieus in each country. Probably, people's religious beliefs are determined primarily by the (perceived) beliefs of other people, not by the kinds of world knowledge and intelligent reasoning that are taught in school and measured by IQ tests.

The implications of the present results for the secularization hypothesis are these: First, comparisons between countries suggest that higher intelligence is indeed associated with lower religiosity, and that intelligence is more

important than prosperity (Tables 6-8). Intelligence is a credible cause of secularization because the average population IQs have been rising substantially during the 20th century (Flynn, 1987; Lynn & Hampson, 1986), in parallel with a massive expansion of formal education (Schofer & Meyer, 2005).

Second, even if the partial correlations of religious belief with education in Tables 2 to 5 underestimate the effect of intelligence, the magnitude of the individual-level correlations within countries is far too small to explain either the differences in country-level religiosity today or the declining importance of religion in advanced societies over the last century. However, it is plausible that small declines in average religiosity brought about by higher intelligence resulted in cultural change towards lower religiosity across generations, and thereby resulted in far greater declines of religiosity than predicted from the rise in the average intelligence of the population alone.

Finally, we must not forget that religion is a familial trait (Cavalli-Sforza, Feldman, Chen, & Dornbusch, 1982). Family environment is the major determinant of religious beliefs for children and young teenagers (Koenig, McGue, & Iacono, 2008), and genetic predisposition contributes to adult religiosity (Bradshaw & Allison, 2008; Eaves, Hatemi, Prom-Womley, & Murrelle, 2008; Kendler & Myers, 2009; Koenig et al., 2008). Therefore the future of religion depends not only on the future of human intelligence, but also on the trans-generational consequences of differential fertility (Meisenberg, 2009, 2010; Meisenberg & Kaul, 2010).

Today, the average level of intelligence is no longer rising in many of the most advanced countries (Beaujean & Osterlind, 2008; Cotton et al., 2005; Flynn, 2009; Sundet, Barlaug, & Torjussen, 2004) and is declining in some countries (Shayer & Ginsburg, 2009; Teasdale & Owen, 2008). However, if the effect of intelligence on religious belief is amplified by cultural change across generations, we can expect declining religiosity in the most advanced societies for another 1 or 2 generations even with stagnating intelligence, as has been proposed recently (Meisenberg, 2011). We can further predict that religion will recover if, and only if, at least one of two conditions is fulfilled: either high religiosity is associated with high fertility at the individual or country level; or the average IQ in today's advanced societies declines because fertility differentials favoring the less educated and intelligent lead to cultural changes that trigger a reversal of the Flynn effect.

References

Ahmad, R., Khanum, S. J., Riaz, Z., & Lynn, R. (2008). Gender differences in means and variance on the Standard Progressive Matrices in Pakistan. *Mankind Quarterly, 49,* 50-57.

Albrecht, S. L., & Heaton, T. B. (1984). Secularization, higher education, and religiosity. *Review of Religious Research, 26,* 43-58.

Anonymous (2009). *De tribus impostoribus, the three impostors*. Ithaca: Cornell University Library. (Original work published 1716)

Ashton, M. C., Lee, K., & Vernon, P. A. (2000). Fluid intelligence, crystallized intelligence, and the openness/intellect factor. *Journal of Research in Personality, 34,* 198-207.

Beaujean, A. A., & Osterlind, S. J. (2008). Using item response theory to assess the Flynn effect in the National Longitudinal Study of Youth 79 children and young adults data. *Intelligence, 36,* 455-463.

Becker, S. O., & Wößmann, L. (2009). Was Weber wrong? A human capital theory of Protestant economic history. *Quarterly Journal of Economics, 124,* 531-596.

Berkman, M. B., Pacheco, J. S., & Plutzer, E. (2008). Evolution and creationism in America's classrooms: A national portrait. *PLoS Biology, 6*(5, e124), 920-924.

Bradshaw, M., & Allison, C. G. (2008). Do genetic factors influence religious life? Findings from a behavior genetic analysis of twin siblings. *Journal for the Scientific Study of Religion, 47,* 529-544.

Branas-Garza, P., & Neuman, S. (2004). Analyzing religiosity within an economic framework: The case of Spanish Catholics. *Review of Economics of the Household, 2,* 5-22.

Cavalli-Sforza, L. L., Feldman, M. W., Chen, K. H., & Dornbusch, S. M. (1982). Theory and observation in cultural transmission. *Science, 218,* 19-27.

Charlton, B. G. (2009). Clever sillies: Why high-IQ people tend to be deficient in common sense. *Medical Hypotheses, 73,* 867-870.

Cotton, S. M., Kiely, P. M., Crewther, D. P., Thomson, B., Laycock, R., & Crewther, S. G. (2005). A normative and reliability study for the Raven's Coloured Progressive Matrices for primary school aged children from Victoria, Australia. *Personality and Individual Differences, 39,* 647-659.

Curry, A. (2009). Creationist beliefs persist in Europe. *Science, 323,* 1159.

Eaves, L. J., Hatemi, P. K., Prom-Womley, E. C., & Murrelle, L. (2008). Social and genetic influences on adolescent religious attitudes and practices. *Social Forces, 86,* 1621-1647.

Eff, E. A. (2004). Spatial and cultural autocorrelation in international datasets. *Department of Economics and Finance Working Paper series*. Retrieved February 21, 2006, from www.mtsu.edu/~berc/working/spatial%20autocorrelation%20z.pdf

Flynn, J. R. (1987). Massive IQ gains in 14 nations: What IQ tests really measure. *Psychological Bulletin, 101,* 171-191.

Flynn, J. R. (2009). Requiem for nutrition as the cause of IQ gains: Raven's gains in Britain 1938-2008. *Economics and Human Biology, 7,* 18-27.

Francis, L. J. (1998). The relationship between intelligence and religiosity among 15-16-year-olds. *Mental Health, Religion and Culture, 1,* 185-196.

Fulljames, P., & Francis, L. J. (1988). The influence of creationism and scientism on attitudes towards Christianity among Kenyan secondary school students. *Educational Studies, 14,* 77-96.

Glaeser, E. L., & Sacerdote, B. I. (2008). Education and religion. *Journal of Human Capital, 2,* 188-215.

Gould, S. J. (1997). Non-overlapping magisteria. *Natural History, 106,* 16-24.

Gross, N., & Simmons, S. (2009). The religiosity of American college and university professors. *Sociology of Religion, 70,* 101-129.

Hameed, S. (2008). Bracing for Islamic creationism. *Science, 322,* 1637-1638.

Huntington, P. (2004). *Who Are We?* New York: Simon & Schuster.

Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review, 65,* 19-51.

Inglehart, R., Basáñez, M., Díez-Medrano, J., Halman, L., & Luijkx, R. (2004). *Human beliefs and values. A cross-cultural sourcebook based on the 1999-2002 values surveys.* México: Siglo XXI Editores.

Johnson, D. C. (1997). Formal education vs. religious belief: Soliciting new evidence with multinomial logit modeling. *Journal for the Scientific Study of Religion, 36,* 231-246.

Kendler, K. S., & Myers, J. (2009). A developmental twin study of church attendance and alcohol and nicotine consumption: A model for analyzing the changing impact of genes and environment. *American Journal of Psychiatry, 166,* 1150-1155.

Koenig, L. B., McGue, M., & Iacono, W. G. (2008). Stability and change in religiousness during emerging adulthood. *Developmental Psychology, 44,* 532-543.

Lehman, E. C. (1974). Academic discipline and faculty religiosity in secular and church-related colleges. *Journal for the Scientific Study of Religion, 13,* 205-220.

Lehrer, E. (2004). Religiosity as a determinant of educational attainment: The case of conservative Protestant women in the United States. *Review of Economics of the Household, 2,* 203-219.

Leuba, J. H. (1921). *The belief in God and immortality. A psychological, anthropological and statistical study.* Chicago: Open Court.

Loury, L. D. (2004). Does church attendance really increase schooling? *Journal for the Scientific Study of Religion, 43,* 119-127.

Lynn, R. (2008). *The global bell curve.* Augusta (GA): Washington Summit.

Lynn, R. (2010). National IQs updated for 41 nations. *Mankind Quarterly, 50,* 275-296.

Lynn, R., & Hampson, S. (1986). The rise of national intelligence: Evidence from Britain, Japan and the U.S.A. *Personality and Individual Differences, 7,* 23-32.

Lynn, R., Harvey, J., & Nyborg, H. (2009). Average intelligence predicts atheism rates across 137 nations. *Intelligence, 37,* 11-15.

Lynn, R., & Meisenberg, G. (2010). National IQs calculated and validated for 108 nations. *Intelligence, 38,* 353-360.

Lynn, R., & Vanhanen, T. (2006). *IQ and global inequality.* Augusta, GA: Washington Summit.

Meisenberg, G. (2007). Does multiculturalism promote income inequality? *Mankind Quarterly, 47,* 3-39.

Meisenberg, G. (2009). Wealth, intelligence, politics and global fertility differentials. *Journal of Biosocial Science, 41,* 519-535.

Meisenberg, G. (2010). The reproduction of intelligence. *Intelligence, 38,* 220-230.

Meisenberg, G. (2011). Secularization and desecularization in our time. *Journal of Social Political and Economic Studies, 36,* 318-359.

Meisenberg, G., & Kaul, A. (2010). Effects of sex, race, ethnicity and marital status on the relationship between intelligence and fertility. *Mankind Quarterly, 50,* 151-187.

Meisenberg, G., Lawless, E., Lambert, E., & Newton, A. (2006). The social ecology of intelligence on a Caribbean island. *Mankind Quarterly, 46,* 395-433.

Merrill, R. M., Lyon, J. L., & Jensen, W. J. (2003). Lack of a secularizing influence of education on religious activity and parity among Mormons. *Journal for the Scientific Study of Religion, 42,* 113-124.

Mueller, C. W., & Johnson, W. T. (1975). Socioeconomic status and religious participation. *American Sociological Review, 40,* 785-800.

Murray, C. (2007). Jewish genius. *Commentary, 123*(10 April), 29-35.

Nyborg, H. (2009). The intelligence-religiosity nexus: A representative study of white adolescent Americans. *Intelligence, 37,* 81-93.

Oesterdiekhoff, G. W. (2007). Ancient sun cults: Understanding religious rites in terms of developmental psychology. *Mankind Quarterly, 48,* 99-116.

Oesterdiekhoff, G. W. (2009). *Mental growth of humankind in history*. Norderstedt: Bod.

Oesterdiekhoff, G. W., & Rindermann, H. (2007). The spread of AIDS in developing countries: A psycho-cultural approach. *Journal of Social, Political and Economic Studies, 32,* 201-222.

Pascal, B. (2008). *Pensées*. New York: Oxford University Press. (Original work published 1670)

Piaget, J. (1947). *La psychologie de l'intelligence.* Paris: Colin.

Rindermann, H. (2006). Was messen internationale Schulleistungsstudien? [What do international student assessment studies measure? School performance, student abilities, cognitive abilities, knowledge or general intelligence?] *Psychologische Rundschau, 57,* 69-86.

Rindermann, H. (2007). The big *G*-factor of national cognitive ability. *European Journal of Personality, 21,* 767-787.

Rindermann, H. (2008). Relevance of education and intelligence for the political development of nations. *Intelligence, 36,* 306-322.

Rindermann, H. (2009). Intelligenz als bürgerliches Phänomen. [Intelligence as a bourgeois phenomenon.] *Merkur, 63*(8/723), 666-676.

Rindermann, H., & Ceci, S. J. (2009). Educational policy and country outcomes in international cognitive competence studies. *Perspectives on Psychological Science, 4,* 551-577.

Rindermann, H., & Heller, K. A. (2005). The benefit of gifted classes and talent schools for developing students' competences and enhancing academic self-concept. *Zeitschrift für Pädagogische Psychologie, 19,* 133-136.

Rindermann, H., & Meisenberg, G. (2009). Relevance of education and intelligence at the national level for health: The case of HIV and AIDS. *Intelligence, 37,* 383-395.

Russell, B. (1927). *Why I am not a Christian*. London: Watts.

Schofer, E., & Meyer, J. W. (2005). The worldwide expansion of higher education in the twentieth century. *American Sociological Review, 70,* 898-920.

Scott, E. C. (1997). Antievolution and creationism in the United States. *Annual Review of Anthropology, 26,* 263-289.

Shayer, M., & Ginsburg, D. (2009). Thirty years on – a large anti-Flynn effect? (II): 13- and 14-year-olds. Piagetian tests of formal operations norms 1976-2006/7. *British Journal of Educational Psychology, 79,* 409-418.

Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics, 87*(3), 355-374.

Stark, R., & Iannaccone, L. R. (1994). A supply-side reinterpretation of the "secularization" of Europe. *Journal for the Scientific Study of Religion, 33,* 230-252.

Steppan, M. (2010). Protestantism and intelligence: Max Weber and the Rindermann-paradox. *The International Journal of Educational and Psychological Assessment, 5,* 134-154.

Sundet, J. M., Barlaug, D. G., & Torjussen, T. M. (2004). The end of the Flynn effect? A study of secular trends in mean intelligence test scores of Norwegian conscripts during half a century. *Intelligence, 32,* 349-362.

Tamney, J. B. (1980). Functional religiosity and modernization in Indonesia. *Sociological Analysis, 41,* 55-65.

Teasdale, T. W. & Owen, D. R. (2008). Secular declines in cognitive test scores: A reversal of the Flynn effect. *Intelligence, 36,* 121-126.

Thalheimer, F. (1973). Religiosity and secularization in the academic professions. *Sociology of Education, 46,* 183-202.

United Nations (2004). *Human Development Report.* United Nations. Retrieved October 15, 2008, from http://hdr.undp.org/en/media/HDR04_complete.pdf

United Nations (2005). *Human Development Report.* United Nations. Rretrieved October 10, 2008, from http://hdr.undp.org/en/media/HDR05_complete.pdf

Vaughan, T. R., Smith, D. H., & Sjoberg, G. (1966). The religious orientations of American natural scientists. *Social Forces, 44,* 519-526.

Weber, M. (1930). *The Protestant ethic and the spirit of capitalism.* London: Allen & Unwin. (Original work published 1905)

Woodley, M. A. (2010). Are high-IQ individuals deficient in common sense? A critical examination of the 'clever sillies' hypothesis. *Intelligence, 38,* 471-480.

Zern, D. S. (1984). Religiousness related to cultural complexity and pressures to obey cultural norms. *Genetic Psychology Monographs, 110,* 207-227.

Zuckerman, P. (2005). Atheism: Contemporary rates and patterns. In M. Martin (Ed.), *The Cambridge companion to atheism* (pp. 47-67). Cambridge: Cambridge University Press.

Received November 4th, 2011
Accepted April 12th, 2012
Published June 30th, 2012