

Religion, Paranormal Beliefs, and Distrust in Science: Comparing East Versus West

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Summary

Studies in Western contexts suggest that religiosity is in conflict with rationality since it relates to paranormal beliefs and distrust in science. East Asian cultures, known to be holistic and tolerant of contradictions, may, however, not experience this conflict. Using the International Social Survey Program, we analyzed data from Buddhists, Protestants, and Catholics in South Korea ($Ns = 358; 391; 135$), as well as Catholics and Protestants in Austria and Denmark ($Ns = 715; 1,545$). Results confirmed a positive association between religiosity and paranormal beliefs among dominant religious group but not among Korean Christians. Moreover, whereas religiosity in the West correlated positively with distrust in science, the opposite held for religious Korean groups. Religiosity mediated the relationship between paranormal beliefs and distrust in science among all dominant religious groups but in opposite directions in East and West. These findings bring a new cross-cultural perspective on the religion-science relationship.

Keywords

paranormal beliefs – science – religion – East – West – culture

Introduction

In popular views, religion is seen as irrational and relating to paranormal, non-scientific, and even anti-scientific beliefs. In this framework, authors have argued that scientific and religious worldviews are fundamentally incompatible and in opposition with one another (Harris, 2004; Norris & Inglehart, 2004). Although this opposition between religion and science is regularly challenged (Rosengren & Gutiérrez, 2011; Stark, 2008), it has been investigated only in Western societies and has mainly concerned Christianity. Would this debate be regarded as a burning issue in East Asian societies as well? We argue that, as East Asian cultures and religions have been found to be characterized by holism and tolerance toward contradiction (e.g., Nisbett, 2003; Spencer-Rodgers, Williams, & Peng, 2010), religiosity and science may not be in conflict among East Asian Buddhists, or may be in conflict to a lesser extent when compared to Western Christians. In other words, religion and paranormal beliefs should not prevent East Asian Buddhists from trusting in science. The rationale supporting our hypothesis is developed below.

Religion, Paranormal Beliefs, and Science

Throughout literature, religious and paranormal beliefs have been found to be positively linked. Several scholars indeed found that a person inclined towards religious beliefs is also susceptible to paranormal beliefs (Orenstein, 2002; Rudski, 2003). Religious and paranormal beliefs have actually some characteristics in common since they are both used in response to frightening situations and crises (Pargament, 2002), neglect in a similar way modern scientific views (Goode, 2000), and relate to high levels of intuitive thinking (Aarnio & Lindeman, 2007). Nevertheless, other scholars argued that religious and paranormal or magical beliefs must be negatively related or at least independent given the incongruity of paranormal beliefs with teachings of Christianity (Rice, 2003). In some exceptional studies, Sjodin (2002), as well as Emmons and Sobal (1981), showed that religiosity and paranormal beliefs were indeed significantly negatively related. Bainbridge (2004) reconciled these apparent contradictory results by proposing a curvilinear relationship between religion

and paranormal beliefs. Indeed, paranormal beliefs related negatively with religiosity only among extremely religious people or militant atheists, but this relation was positive among the general and moderately religious population (Aarnio & Lindeman, 2007).

Traditionally, religion (as well as other supernatural beliefs) and science are somewhat seen as opposed ideologies (Dawkins, 2006). In our modern society, religious and paranormal beliefs should be driven out by rationality and logic (Norris & Inglehart, 2004). Science and religion offer competing explanations for many of the same phenomena (e.g., the origin of life); people have thus to choose between these explanations and cannot support both at the same time (Evans, 2011; Preston & Epley, 2005). Indeed, alternative explanations for the same effect are negatively associated with one another, and the availability of one plausible explanation may diminish the perceived value of the other (Thagard, 2006). Furthermore, whereas religious believers endorse an intuitive way of thinking, science is characterized by an analytic thinking style (Aarnio & Lindeman, 2007) that is known to promote religious disbelief (Gervais & Norenzayan, 2012). Finally, another possible source of conflict between science and religion could derive from an opposition between religious morality and moral considerations in science (Evans, 2011).

Nevertheless, despite this competitive view of science and religious, as well as paranormal beliefs, several recent psychological studies suggest that supernatural and scientific thinking actually coexists in people's minds (see, for instance, Rosengren & Gutiérrez, 2011). The belief in magic and the supernatural seems indeed to be a fundamental property of the human mind (Subbotsky, 2014). Both children and adults have been found to endorse at the same time both religious (or paranormal) as well as scientific explanations of different phenomena (i.e., origins of species, afterlife) in function of the context and even to integrate both explanations by viewing them as complementary (see, for instance, Evans & Lane, 2011; Harris & Giménez, 2005).

Cross-cultural and Cross-religious Perspective

A main limitation of the existing literature is the lack of a cross-religious and a cross-cultural perspective. Indeed, an increasing number of cultural and cross-cultural studies have shown that differences between East Asian and Western cultures are substantial and deeply-rooted (Henrich, Heine, & Norenzayan, 2010). East Asians, including Koreans, in contrast to Western Aristotelian linear logic, demonstrate a dialectical and holistic view of the self and the world, which allows more contradictions and integration of seemingly, opposed

elements and changes (Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001; Spencer-Rodgers et al., 2010). This analytic versus holistic approach and tolerance of contradictory elements becomes particularly interesting when one thinks about the apparent paradox between religion and science, at least as experienced in the West. To the extent that religion parallels, and is part of, culture (Cohen, 2009), basic cultural differences can be extended to religion. Buddhism or Taoism are identically characterized by a holistic approach and a tolerance to change and contradictions. Initial empirical evidence suggests, for instance, that religiosity in Buddhism, contrary to Christianity, is positively correlated to universalism and negatively related to the need for cognitive closure (Saroglou & Dupuis, 2006), that religion in East Asian cultural contexts (including the South-Korean context) does not help people to maintain a sense of control over events (Sasaki & Kim, 2011), and that East Asian believers (in Japan, South Korea, and Taiwan) easily tolerate people from other religious groups (Clobert, Saroglou, Hwang, & Soong, 2013).

It is furthermore interesting to point out that science and religion have been historically linked in Asia (e.g., acupuncture in Taoism, Tibetan medicine in Buddhism). Moreover, the essential teachings of Buddhism are generally seen as consonant with scientific findings (McMahan, 2004; Silver, 2006; Wallace, 2003). Indeed, Buddhism dispenses with the notion of a personal God and explains the origins and mechanisms of the universe in terms of cause and effects. More importantly, Buddhism utilizes rigorous methods to experientially investigate phenomena of the natural world (Harvey, 1990). Buddha even urged his followers to not blindly believe him, but rather to question, examine, inquire, and rely on their own experience. Beyond these theoretical analyses of Buddhist teachings and texts that might, of course, be seen as partial and oriented, Buddhist authorities, including those in South Korea, regularly support scientific progress in religiously controversial areas in the West, such as stem-cell research or cloning (see, for instance, Simpson, 2009; Tierney, 2007). For all these reasons, we think that whereas religiosity and paranormal beliefs cannot be easily reconciled with science in the West, they might not be in conflict in the East.

Present Study

This study aims to investigate the relationships between religiosity, paranormal beliefs, and distrust in science across different religious groups and among similar religious groups across cultural contexts. We will mainly compare Western (Catholics and Protestants) to East Asian believers (Buddhists), as well as

Christians (Catholics and Protestants) in Western (Austria and Denmark) and Eastern (South Korea) cultural contexts. Thus, the main aim of this study is to provide the first step in a cross-religious, but also cross-cultural, understanding of the complex relationship between religion, paranormal beliefs, and science.

We first hypothesized that religiosity among dominant religious groups (i.e., Buddhists in South Korea and Christians in the West) will be positively related with paranormal beliefs given that we investigate the general population (see Bainbridge, 2004). Second, as science and religion seem not to be historically and culturally opposed in East Asian societies (e.g., McMahan, 2004; Wallace, 2003), we expected the relationship between religiosity and distrust in science to be negative for Buddhists. Finally, we also included Christians from South Korea to investigate whether they display similarities with Western Christians or with other Eastern religious groups.

Method

Dataset

Data for this study were retrieved from the International Social Survey Program (ISSP) 2008 module on religion. The analysis included three national samples: South Korea ($N = 1,482$), Austria ($N = 923$), and Denmark ($N = 1,895$). Among these countries, different religious groups were represented: Buddhists ($N = 358$), Catholics ($N = 135$), Protestants ($N = 391$), and atheists ($N = 598$) in South Korea; Catholics ($N = 747$) and atheists ($N = 176$) in Austria; Protestants ($N = 1,617$) and atheists ($N = 278$) in Denmark. The final sample included 4,300 participants (53.6% women). Mean age of participants was 46.5 ($SD = 16.58$).

According to Jung (2014), South Korea is an excellent context for examining denominational variations since various religious groups have co-existed peacefully there throughout history. According to statistics, Buddhism is the largest and oldest religion with around 10.7 million adherents, followed by Protestantism with 8.6 million believers, and Catholicism with 5.1 million followers (National Statistical Office, 2005). Throughout this manuscript, we will designate as “dominant” the largest religious group traditionally present in one given cultural and national context (i.e., Protestants in Denmark, Catholics in Austria, and Buddhists in South Korea).

Among the three East Asian countries available in the ISSP database, we retained South Korea considering the fact that (1) the paranormal beliefs items were present (these were optional items that were not asked in all countries), and (2) the four major convictional groups investigated in this study were well represented. Austria and Denmark were selected because (1) the paranormal

beliefs items were also present, and (2) they are respectively predominantly Catholic and Protestant countries.

Measures

Paranormal Beliefs

Paranormal beliefs were measured with four items assessing belief in fortune-tellers, good luck charms, horoscopes, and faith healers (Likert scale ranging from 1 = *definitely true* to 4 = *definitely false*). The scores were reversed so that a higher score reflects stronger beliefs (Cronbach's Alphas ranged from .69 to .88 across countries and religious groups). Satisfactory Tucker's Phi equivalence indices were found across religious groups and ranged from $\phi = .97$ to $\phi = .99$ (above .95, see Van de Vijver & Poortinga, 1994).

Distrust in Science

Distrust in science was measured by the item "We trust too much in science" (Likert scale ranging from 1 = *strongly agree* to 5 = *strongly disagree*; reversed).

Religious Identification

The ISSP 2008 included a measure of self-identification as religious through this single item: "Would you describe yourself as . . .?" (responses ranged from 1 = *extremely religious* to 7 = *extremely non-religious*, reversed).

Religious Practice

Three items respectively addressing three facets of religious practice were used; i.e., frequency of prayer, church attendance, and visit of holy places (Likert scale ranging from 1 = *never* to 11 = *once a day*). Since these items addressed different facets of religious practice, the reliability was modest (Cronbach's Alphas ranged from .47 to .64 across countries and religious groups). Satisfactory equivalence indices were found, ranging from $\phi = .98$ to $\phi = .99$ across religious groups.

Religious Beliefs

For Christians, four items measured beliefs in life after death, heaven, hell, and religious miracles (Cronbach's Alphas ranged from .84 to .92 across countries and religious groups). For Buddhists, three items measured beliefs in reincarnation, Nirvana, and the supernatural powers of ancestors (Cronbach's Alphas ranged from .73 to .80 across religious groups). Participants were asked to rate their beliefs from 1 = *Yes, I definitely believe* to 7 = *No, I definitely do not believe* (reversed).

Results

Descriptive statistics for all variables are presented in Table A1 (see the appendix). Correlations of religious variables with paranormal beliefs and distrust in science (see Table 1) were computed distinctly by religious group and country. Positive correlations were found between paranormal beliefs and all measures of religiosity for Catholics in Austria, Protestants in Denmark, and Buddhists in South Korea. However, for Christians in South Korea, mostly negative correlations were found between paranormal beliefs and measures of religiosity. As far as distrust in science is concerned, two different patterns of results according to cultural groups were observed. Distrust in science was negatively related to religious measures for Buddhists and Catholics in South Korea but positively related for Christians in Western countries (Austria and Denmark).

TABLE 1 *Correlations between indicators of religiosity, paranormal beliefs, and distrust in science*

Countries	Religious groups		
	Buddhists	Catholics	Protestants
	Paranormal Beliefs		
South Korea			
Religious identification	.20** (.22**)	-.12 (-.02)	-.23** (-.23**)
Religious practice	.16** (.17**)	-.20* (-.15+)	-.23** (-.23**)
Religious beliefs	.40** (.39**)	.06 (.09)	-.14** (-.15**)
Austria			
Religious identification		.19** (.21**)	
Religious practice		.19** (.23**)	
Religious beliefs		.34** (.35**)	
Denmark			
Religious identification			.33** (.33**)
Religious practice			.20** (.18**)
Religious beliefs			.45** (.45**)

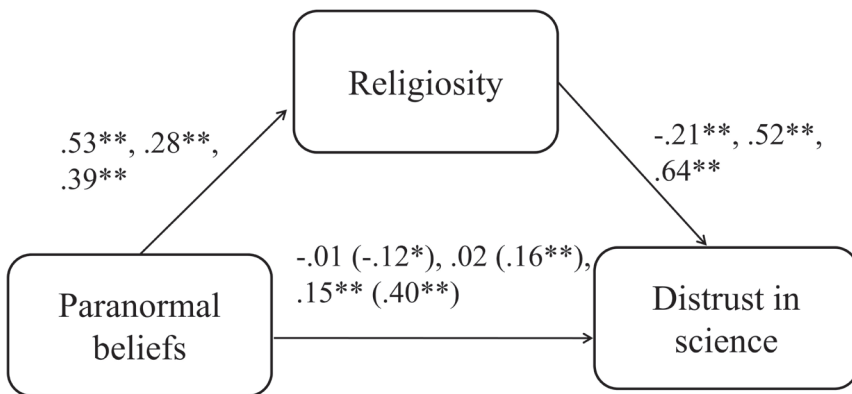
TABLE 1 *Correlations between indicators of religiosity (cont.)*

Countries	Religious groups		
	Buddhists	Catholics	Protestants
	Distrust in science		
South Korea			
Religious identification	-.10+ (-.08)	-.31** (-.30**)	-.04 (-.05)
Religious practice	-.07 (-.04)	-.16+ (-.14+)	-.05 (-.05)
Religious beliefs	-.14* (-.17**)	-.27** (-.28**)	.00 (.00)
Austria			
Religious identification		.33** (.31**)	
Religious practice		.28** (.27**)	
Religious beliefs		.28** (.29**)	
Denmark			
Religious identification			.32** (.30**)
Religious practice			.31** (.27**)
Religious beliefs			.32** (.31**)

Note. Correlations controlling for age and gender are in parentheses. + $p < .10$. * $p < .05$. ** $p < .01$.

Paranormal beliefs and distrust in science, both related to measures of religiosity, were also found to be positively associated among Catholics in Austria ($r = .12$; $p < .001$) and Protestants in Denmark ($r = .23$; $p < .001$) but negatively related among Buddhists in South Korea ($r = -.08$, $p = .019$). Mediational analyses were then conducted distinctly by country. As the direction was rather uncertain, we performed two mediation analyses for each country in order to determine whether paranormal beliefs mediated the religiosity-distrust in science link (Model 1) or whether religiosity was the mediator of the paranormal beliefs-distrust in science relationship (Model 2). Prior to the analysis, all measures of religiosity were combined by item (one item from the religious identification measure, 3 items from the religious practice measure, and 3 (Buddhist beliefs) or 4 (Christian beliefs) items from the religious beliefs measure. The items were then Z-transformed and averaged in order to create a single indicator of religiosity (Cronbach's Alphas ranging from .82 to .86). Bootstrap analyses were used to test for the significance of the mediation. The results obtained showed that the indirect effects (IEs) were only significant or

had more explanatory power using Model 2, with points estimate of $IE_{Austria} = .12$, $SE = .020$, 95% BCa CI = [.08, .16]; $IE_{Denmark} = .23$, $SE = .021$, 95% BCa CI = [.19, .28]; and $IE_{South-Korea} = -.07$, $SE = .028$, 95% BCa CI = [-.13, -.02], compared to Model 1, with points estimate of $IE_{Austria} = .01$, $SE = .013$, 95% BCa CI = [-.02, .03]; $IE_{Denmark} = .06$, $SE = .017$, 95% BCa CI = [.02, .09]; and $IE_{South-Korea} = -.02$, $SE = .019$, 95% BCa CI = [-.05, .02] (respectively for Austria, Denmark, and South Korea). Therefore, we can conclude that Model 2 is the most powerful, suggesting that the effect of magical thinking on distrust in science is mediated by religiosity. The regression coefficients corresponding to Model 2 are illustrated in Figure 1 for each country. As reported, a total mediation through religiosity was found in explaining the relation between paranormal beliefs and distrust in science for Austria ($c = .02$; $c' = .16^{**}$) and South Korea ($c = -.02$; $c' = -.12^*$). Nevertheless, we only found a partial mediation for Denmark ($c = .15^{**}$; $c' = .40^{**}$) suggesting that other variables might mediate the relation between paranormal beliefs and distrust in science in Denmark.



IEs = -.11, .14, .25; SEs = .033, .021, .022; 95% BCa CIs = [-.18, -.05], [.10, .19], [.21, .29].

FIGURE 1 Mediation of the effect of paranormal beliefs on distrust in science through religiosity (Model 2).

Note. Numbers on paths represent standardized regression coefficients; c' paths representing direct effects of paranormal beliefs on distrust in science are in parentheses. IEs = indirect effects of paranormal beliefs on distrust in science through religiosity. SEs = standard errors. 95% BCa CIs = 95% bias corrected and accelerated confidence intervals. For each result, three numbers are provided respectively for South Korea, Austria, and Denmark. * $p < .05$. ** $p < .01$.

Discussion

Taken together, the results support (a) the hypothesis of a positive and cross-culturally valid relationship between religiosity and paranormal beliefs, at least for dominant religious groups, and (b) the hypothesis of a culture-dependent association (East versus West) between religiosity and attitudes toward science. Regardless of the cultural context, religiosity was positively linked with paranormal beliefs among dominant religious groups. Nevertheless, the conflict between religiosity and distrust in science is culture-dependent: Whereas religiosity was positively related with distrust in science in the West, it was negatively related in the East. The negative association between religiosity and paranormal beliefs among South Korean Christians (non-dominant religious groups) may be explained by a higher religiosity. Indeed, when comparing Christians and Buddhists in South Korea, we noticed that the former were more religious than the latter (see Table A1). According to Aarnio and Lindeman (2007), the association between religiosity and paranormal beliefs should be negative among extremely religious people. Furthermore, Kim (2002) found that Buddhists in South Korea, compared with Christians, showed more traditional attitudes and beliefs in horoscopes, geomancy, or divination. Finally, the relationship between religion, paranormal beliefs, and distrust in science was explained by the same mechanism across cultures, although the effects were different in direction. In the West, paranormal beliefs were related to higher religiosity, which in turn was associated with a higher distrust in science. In the East, paranormal beliefs were also related to higher religiosity but the latter was associated with a lower distrust in science.

The absence of conflict between religion and science in East Asia is probably due to cultural variables since it applied to all religious groups in South Korea. We suggest that the holistic approach of the world and the tolerance of contradictions promoted in East Asian cultures and philosophies may play a leading role in this perceived compatibility of religion and science. Nevertheless, it remains to investigate whether our findings are due to an integrative conception of seemingly contradictory elements such as religion and science or simply to different conceptions of religion and/or science in the East that may not be considered as opposed. Future research in this field should thus focus on three complementary aspects: (a) identifying the possible mechanisms explaining the lack of conflict between religion and science in East Asian countries (e.g., tolerance of contradiction), (b) clarifying the conception and the function of religiosity across cultures, and (c) specifying the status and conceptions of science in East Asia compared to the West.

The present study is clearly exploratory and has several limitations. The ISSP module does not contain scales measuring different religious orientations (e.g., fundamentalism, quest) and dimensions (e.g., emotional, relational religiosity). Further studies should measure various aspects of religiosity to identify which orientation or dimension is involved in the observed relationships. Similarly, trust in science was measured through a single item, which is far from sufficient to capture relationships between such complex concepts. Future research should use more complex and validated measures of attitudes toward science to test the present findings. Furthermore, the effect sizes of the mediations were modest, leaving room for other potential mediators to explain the religion-science relationship.

Another matter of concern inherent to cross-cultural research is the comparability of measures and/or concepts in different cultural contexts. The present findings might of course be due to different conceptions of science, religion, and paranormal issues across cultures. For instance, whereas fortune telling and horoscopes might appear as truly paranormal beliefs for Christians, they represent traditional religious beliefs among Buddhists in South Korea (Kim, 2002). Even if paranormal beliefs were positively associated with religiosity among Buddhists in South Korea and Christians in Western countries, this different acceptance of paranormal beliefs as a part of religious practices might partially account for the negative association between paranormal beliefs and religiosity found among Christians in South Korea. It is indeed always difficult to guarantee that the measurement tools capture the same reality in different contexts. Analyzing ISSP data using questionnaires translated by a team of experts should at least provide us with some confidence about the cross-cultural comparability, but must always be careful when it comes to the interpretation of such comparisons.

Finally, it seems particularly important to investigate this topic not only for theoretical reasons, but also for applied purposes. The conflict between religiosity and science experienced in the West (and more specifically the mistrust of science among religious people) has a considerable negative impact on various outcomes such as the patient's compliance (Meredith, Jaffe, Mundy, & Fraser, 2001), the use and dispense of contraception (Davidson, Pettis, Joiner, Cook, & Klugman, 2010), the patient's recovery (Pargament, Koenig, Tarakeshwar, & Hahn, 2001), or the teaching of scientific theories (Poole, 2008). Therefore, understanding why religiosity is not in conflict with science in East Asian societies may indirectly help to identify which approach may attenuate the conflict experienced in the West.

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Appendix

TABLE A1 Means, standard deviations, and between-groups comparisons for all variables distinctly by religious group and country

Countries	Measures	Buddhists ^a M(SD)	Catholics ^b M(SD)	Protestants ^c M(SD)	Atheists ^d M(SD)	F	ANOVA	df
South-Korea								
	Religious identification	4.51(1.18) bcd	4.91(1.14) acd	5.26(1.21) abd	2.46(1.40) abc	459.26**		3,1467
	Religious practice	2.90(1.28) bcd	3.91(1.66) acd	4.90(1.76) abd	1.90(1.02) abc	394.08**		3,1477
	Religious beliefs	2.36(0.69) cd	2.82(0.79) cd	3.20(0.82) abd	1.88(0.69) abc	52.50**		3,1473
	Paranormal beliefs	2.16(0.6) bcd	1.73(0.60) ac	1.55(0.58) abd	1.78(0.62) ac	65.41**		3,1469
	Distrust in science	3.29(1.02) b	2.89(1.08) acd	3.24(1.14) b	3.37(1.01) b	7.43**		3,1455
Austria								
	Religious identification		4.07(1.59)		3.69(1.74)	7.37**		1,882
	Religious practice		2.86(1.37)		2.65(1.31)	3.56+		1,921
	Religious beliefs		2.51(0.86)		2.50(0.79)	0.03		1,863
	Paranormal beliefs		2.08(0.82)		2.10(0.78)	0.08		1,882
	Distrust in science		2.49(1.14)		2.36(1.01)	1.75		1,866
Denmark								
	Religious identification			3.70(1.19)	2.64(1.53)	167.19**		1,1832
	Religious practice			2.50(1.24)	2.04(1.17)	32.35**		1,1885
	Religious beliefs			1.89(0.84)	1.65(0.92)	17.45**		1,1793
	Paranormal beliefs			1.88(0.75)	1.64(0.77)	23.55**		1,1828
	Distrust in science			2.02(1.25)	1.75(1.25)	10.65**		1,1801

Note. The letter symbols indicate the statistically significant (Tukey's HSD post hoc test, $p < .05$) differences between the groups a-d. + $p < .10$. ** $p < .01$.