

# The Feeling Is Not Mutual: Religious Belief Predicts Compatibility Between Science and Religion, but Scientific Belief Predicts Conflict

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The aim of the present research was to examine the independent contribution of beliefs in science and religion, respectively, to perceptions of science–religion compatibility across diverse countries and religious groups. To assess this, we recruited participants from three countries (the United Kingdom, Netherlands, and Kazakhstan;  $N = 684$ ) and presented them with measures of belief in science and religious belief as independent constructs, such that the belief in science measure referred only to perceptions of science, without comparing science to religion, while the religious belief measure referred only to religious beliefs, without comparing religion to science. Participants then indicated the extent to which they saw conflict or compatibility between science and religion when it came to ontological/existential questions. Across countries, we found that religious belief, independently of belief in science, predicted strong science–religion compatibility perceptions, while belief in science, independently of religious belief, predicted conflict. Religious believers and believers in science have conflicting views on the relationship between science and religion, suggesting they may use different meaning systems to find meaning.

**Keywords:** science and religion, science, religion, meaning, belief

**Supplemental materials:** <https://doi.org/10.1037/rel0000537.supp>

The relationship between science and religion is complex, sometimes seen to be in conflict as two competing explanations of the world, and sometimes seen to be compatible (Zein et al., 2024). Religious beliefs and scientific beliefs may each, independently, inform views on the relative conflict or compatibility between the two. In the current cross-country work, we examine the extent to

which compatibility/conflict views between science and religion are predicted by belief in science and belief in religion, respectively. Importantly, however, we expect that religious belief and scientific belief would not be associated with compatibility in the same way. Religious belief (independent of belief in science) was predicted to relate to stronger perceptions of science–religion compatibility. But this was not expected for the scientific meaning system. Rather, belief in science (independent of religious belief) was expected to predict low perceptions of science–religion compatibility.

## Compatibility and Conflict in Meaning and Explanation

A key factor contributing to perceived conflict between science and religion is the idea that they rely on qualitatively different assumptions and epistemologies that can be difficult to reconcile (Rutjens & Preston, 2020). Whereas science assumes the exclusive operation of natural phenomena within the natural world, religion also uses supernatural phenomena as a primary causal mechanism (Hanegraaff, 2013; Rutjens & Preston, 2020). Science and religion are also seen to differ in epistemology, or “ways of knowing”: Science relies more on systematic empirical methods as a source of knowledge, but religious belief is often based on nonscientific ways of knowing such as faith, intuition (i.e., what feels true), and

This article was published Online First December 16, 2024.

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Data and analyses code are available on the Open Science Framework at <https://osf.io/b2sk4/>. This project has received funding from the European Research Council under the European Union's Horizon 2020 research and innovation program (Grant 849125) awarded to Bastiaan T. Rutjens.

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personal revelation. Compared with religious knowledge, scientific knowledge is often seen as objective, open to revisions, and less personally important (Metz et al., 2023), though it is important to note that in practice, scientists also often rely on intuitions to generate knowledge, while religious believers may require empirical evidence to support their beliefs (e.g., seeing evidence of divine intervention in natural phenomena).

Religious and scientific explanations are also both sources of meaning (J. Preston & Epley, 2005). Need for meaning is highly important to people (Heine et al., 2006), and a common path to meaning is to believe in systems that serve as powerful explanations, including science and religion (Proulx, 2020). Both religious belief and science belief provide answers to existential and ontological questions, for example, “how did life begin? what happens when we die?” But answers to these questions may differ, and the extent that science and religion are perceived to be in conflict is often associated with whether they seem to compete as explanations. For example, after science was implied to have weak explanatory value to explain the origins of life and the universe, participants in a semantic-priming task were quicker to pair “God” with positive words, showing an implicit “God of the Gaps” effect (J. L. Preston & Epley, 2009). Explanations developed through science and religion are not just useful for explaining but become part of powerful worldviews imbued with an existential meaning, which, in turn, can heighten their perceived conflict, especially as each can be used to explain “big” questions such as the origins of life and the universe.

Important here, different epistemological approaches of science and religion also offer an opportunity for compatibility between the two. Science and religion can be used to fulfill *specific* explanatory needs and hence can be seen as separate but complementary. In samples of mostly religious participants, for example, people rated both scientific and religious explanations to existential questions as serving moral and emotional functions. Yet, more epistemic functions (providing logical and objective empirical support) were attributed more to scientific than religious explanations (Farias et al., 2013), while more nonepistemic functions to religious than scientific ones (Davoodi & Lombrozo, 2022). This suggests that, at least to religious individuals, science and religion may fulfill both types of functions, even though science more so than religion is used to fulfill epistemic versus nonepistemic functions. This is in line with findings showing that people across cultures combine religious and scientific explanations (Legare & Visala, 2011). In this explanatory coexistence perspective, seemingly contradictory beliefs (illness is caused by either viruses or witchcraft) are integrated or juxtaposed to explain the same phenomenon. In other sociological studies, people were found to derive existential meaning and understanding of the world from social identities formed through identification with science, religion, or both (Jones et al., 2020; Kaden et al., 2018). This reflects that at least some people are able to reconcile epistemological differences between science and religion in order to form a coherent understanding of the world (Zein et al., 2024).

### Compatibility and Conflict Perceptions

In the present research, we examine perceived compatibility between science and religion as predicted by independent beliefs in religion and science. We predict there will be an asymmetry

between science and religion beliefs regarding the science–religion relationship, such that one’s religious belief (independent of belief in science) will predict stronger compatibility views, whereas belief in science (independent of religious belief) will predict more conflict views. Previous research shows that religious individuals are more likely to see science and religion as compatible and believe that it is possible for scientists to be religious (and indeed many scientists are religious across cultures), and that this relationship increases with greater religiosity (Ecklund, 2010; Ecklund et al., 2016; Leicht et al., 2022; Sharp et al., 2022). This suggests that religious belief can be associated with valuing both religion and science. Indeed, research also shows that religious people can flexibly endorse either scientific or religious narratives depending on whichever system better preserves meaning (J. L. Preston & Epley, 2009; Proulx, 2020) or use them both simultaneously (Davoodi & Lombrozo, 2022; Legare & Visala, 2011). This flexibility or inclusivity in belief systems by religious people may result from generally positive views toward each system (Johnson et al., 2023). By definition, religious people value religion, which is part of compatibility beliefs. Importantly, when one’s high religious belief is *accompanied* by high belief in science, then perceptions of compatibility are even stronger (Johnson et al., 2023). Leicht et al. (2022) found a similar pattern of results when using measures of self-identification with science and religion.

But it is not clear that positive attitudes toward science, independent from religion, would have the same favorable relationship with science and religion compatibility. On a purely practical level, even if a religious person does not accept all scientific theories as fact, some scientific principles such as the laws of physics are difficult to deny. Yet, it is possible for a person to fully accept science and fully reject all religious beliefs. This indicates a key asymmetry between science and religion that implies strong science beliefs may be less related to compatibility attitudes than are religious beliefs. Furthermore, the perceived conflict between science and religion as epistemologies may be especially pronounced at the high end of the belief in science. A strict scientific approach to belief is exclusively based on physical laws and principles and is opposed in principle to supernatural forces as causal mechanisms. In contrast, religious belief can adopt a general framework of scientific knowledge and mechanisms but also include supernatural forces and mechanisms into the physical world. It may be simply more difficult, therefore, to integrate religion into a system that prioritizes science and data than the other way around.

Here, we are interested in how science and religion beliefs, as separate and discrete beliefs, may independently contribute to the conflict or compatibility beliefs between science and religion. Previous studies that examine science beliefs in relation to compatibility tend to define scientific beliefs with a direct comparison or integration with religious belief (Elsdon-Baker, 2015, 2020). Similarly, Leicht et al. (2022) focused on an interaction between self-identification with science and science in predicting compatibility perceptions. Other recent research investigating belief in science by Johnson et al. (2023) focused on its interaction with religious belief in predicting compatibility perceptions in primarily religious samples of participants and conceptualized belief in science and religion as intertwined meaning systems. This was done by measuring the extent to which religion and science were perceived to be able to answer all important issues (e.g., solve humanity’s problems, or be sources of knowledge) and using a series of juxtaposed items tapping into the value of science

and God (e.g., “Ultimately, Science [God] is the only infallible source of knowledge and truth”). Other common measures of belief in science often directly pit science against religion as a best way of knowing (e.g., Farias et al., 2013), which can complicate the measurement of science attitudes separately and without reference to religion.

Our research adds to this literature by examining the *unique* contributions of belief in science and religious belief, respectively, to perceptions of science–religion compatibility. We achieve this by conceptualizing belief in science and religious belief as discrete, independent meaning systems. Unlike previous operationalizations, we measure belief in science as a way of gaining knowledge, without any implied contrast to religion or spiritual ways of knowing. Religious belief is likewise measured as the strength of personal religious faith (self-identified religiosity and belief in religion as a way of knowing) without explicit comparisons to science or implied superiority to science as a way of knowing (see Table 1 for the measures used). We argue that conceptualizing beliefs in science and religion as discrete, as opposed to intertwined, meaning systems provides a conceptually more precise way of understanding their unique contributions to perceptions of science–religion compatibility. We suggest that higher religious belief would predict perceptions of high science–religion compatibility, independently of belief in science. Although belief in science by definition is associated with valuing science, it does not necessarily involve valuing religion. We therefore expected that science may be associated with low perceptions of science–religion compatibility. We also extend the generalizability of previous work by examining science–religion compatibility perceptions across diverse countries and recruiting more balanced samples in terms of religiosity, including different types of faith (Islam, Christianity), as well as nonreligiosity (atheists, agnostics). This is important because science–religion compatibility perceptions may vary as a function of cultural and religious contexts (Apicella et al., 2020).

## The Present Research

Overall, the present work tested the following hypotheses:

*Hypothesis 1:* Higher religious belief (independent of belief in science) would predict perceptions of high science–religion compatibility.

*Hypothesis 2:* Higher scientific belief (independent of belief in religion) would predict perceptions of high science–religion conflict.

We tested our predictions in studies conducted in the United Kingdom, Netherlands, and Kazakhstan,<sup>1</sup> selected for their diversity of religious contexts. The United Kingdom and the Netherlands are secular, with most religious people identifying as Christians (Central Bureau for Statistics, 2022; Office for National Statistics, 2021). In Kazakhstan, the majority of the population are Muslim (The Association of Religion Data Archives, 2020).

Across all countries, we measured science–religion compatibility perceptions using an eight-item scale (Leicht et al., 2022), where participants indicated the extent to which they personally see science and religion as in conflict or as compatible when considering epistemological and ontological issues associated with big picture questions (e.g., the world creation) and human–world interactions

(e.g., people getting sick). We also included demographic, worldview (e.g., political orientation, spirituality), and education (e.g., science literacy) as control variables.

## Method

### Transparency and Openness

We report how we determined the sample size, data exclusions, and all measures. All our data and data analysis R code are available on the Open Science Framework at <https://osf.io/b2sk4/>. The design and analysis in this study were not preregistered.

### Participants

We aimed at recruiting around 250 participants per study, as it has been suggested that correlations stabilize at a sample size of 250 (Schönbrodt & Perugini, 2013). Our total sample size across all countries was 724. We recruited 247 participants in the United Kingdom (from Prolific recruitment platform), 254 in the Netherlands (student participant panel at a Dutch university), and 223 in Kazakhstan (students and employees at a Kazakhstani university). We excluded 40 participants—17 participants in the United Kingdom, five in the Netherlands, and 18 in Kazakhstan—due to failed attention checks, leaving a total  $N = 684$  (see Table 2 for samples’ characteristics in each country). Sensitivity power analyses for 11 predictors (i.e., we accounted for the inclusion of exploratory worldview variables), 80% of power, and the  $\alpha$  level of .05 indicated the minimum effect size of  $f^2 = .08$  in the United Kingdom and the Netherlands and  $f^2 = .11$  in Kazakhstan.

### Materials

Participants completed all measures online via Qualtrics (see Table 1 for all measures). We asked them to indicate the extent to which they agreed with a number of statements on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*), unless otherwise stated. Besides the measures presented in the table, we asked participants to report their gender, age, and religious affiliation. Participants were also asked the number of years spent in formal education and science training. We also measured extrinsic and intrinsic religiosity and general science attitudes for purposes beyond the scope of the present article and hence not reported here. Materials were presented in English,<sup>2</sup> except in the Kazakhstan version, where measures were translated into Russian by native speakers.

### Analytical Strategy

First, we conducted confirmatory factor analyses and measurement invariance tests to assess whether the science–religion compatibility scale had an appropriate factor structure and was understood in the same way across all countries. Second, we estimated a multilevel multiple regression analysis of compatibility perceptions with *country* as random intercepts to test the main hypothesis across all countries,

<sup>1</sup> We conducted the studies at different time points: Kazakhstan (second half of 2022), the Netherlands (February 2023), and the United Kingdom (April 2023).

<sup>2</sup> In the Netherlands, we presented the materials in English, as participants were fluent English speakers (Dutch students taking university courses in English).

**Table 1**  
*Measures Across All Countries*

Measure	United Kingdom	The Netherlands	Kazakhstan
Perceptions of science–religion compatibility	Participants indicated the extent to which they saw science and religion as in conflict or as compatible when considering eight issues about big picture explanations (the origins of the universe) or human–world interactions ( $\alpha = .91$ ; adapted from <a href="#">Leicht et al., 2022</a> ); for example, “Explaining the origins of the universe” or “Treating physical illness” (1 = <i>complete</i> ; 10 = <i>complete compatibility</i> ).	The same measure as in the United Kingdom ( $\alpha = .86$ ).	The same measure as in the United Kingdom ( $\alpha = .92$ ).
Belief in science	We used a modified Belief in Science measure adapted from <a href="#">Farias et al. (2013)</a> : “Science provides us with the best understanding of the universe,” “Science tells us everything there is to know about what reality consists of,” “The scientific method is the only reliable path to knowledge,” “The only real kind of knowledge we can have is scientific knowledge,” “Science is the most efficient means of attaining truth” ( $\alpha = .90$ ).	We used a modified Belief in Science scale adapted from <a href="#">Farias et al. (2013)</a> . We used five items tested in previous studies ( <a href="#">Rutjens et al., 2018</a> ), for example, “Science tells us everything there is to know about what reality consists of,” or “The scientific method is the only reliable path to knowledge.” We excluded one item that tapped into science–religion conflict perceptions: “We believe too often in science, and not enough in feelings and faith.” ( $\alpha = .85$ )	The same measure as in the Netherlands ( $\alpha = .85$ ).
Religious belief	We adapted the Belief in Science scale to measure religion as the best way of knowing ( $\alpha = .96$ ): “Religion provides us with the best understanding of the universe,” “Religion tells us everything there is to know about what reality consists of,” “Religion is the only reliable path to knowledge,” “The only real kind of knowledge we can have comes from religion,” “Religion is the most efficient means of attaining truth.”	One item: “How religious are you?”	One item: “How religious are you?”
Spirituality	We measured self-identified spirituality (adapted from <a href="#">Rutjens et al., 2021</a> ) with two items: “To what extent do you consider yourself spiritual” and “To what extent other considers you spiritual” ( $r = .86$ ). This measure correlates very highly with other measures of spirituality (e.g., by <a href="#">Delaney, 2005</a> ; see <a href="#">Rutjens et al., 2021</a> ).	The same measure as in the United Kingdom ( $r = .82$ ).	The same measure as in the United Kingdom ( $r = .76$ ).
Religious orthodoxy/fundamentalism	We used two items to measure religious orthodoxy: “God has been defined for once and for all and therefore is immutable,” “Religion is the one thing that gives meaning to life in all its aspects” ( $r = .76$ ; adapted from <a href="#">Rutjens et al., 2018</a> ).	The same measure as in the United Kingdom ( $r = .47$ ).	The same measure as in the United Kingdom ( $r = .68$ ).
Religious upbringing	Participants indicated to what extent their caregivers acted as religious role models and engaged in religious practices ( $\alpha = .94$ ; <a href="#">Lanman &amp; Buhmester, 2017</a> ), for example, “To what extent did your caregiver(s) act fairly to others because their religion taught them so?” and “Overall, to	The same measure as in the United Kingdom ( $\alpha = .93$ ).	The same measure as in the United Kingdom ( $\alpha = .88$ ).

(table continues)

Table 1 (continued)

Measure	United Kingdom	The Netherlands	Kazakhstan
Political conservatism	what extent did your caregiver(s) act as good religious role models?" (scale: 1 = <i>to no extent at all</i> , 7 = <i>to an extreme extent</i> ). We measured conservatism with one item: "In terms of political orientation, to what extent would you describe yourself as liberal or conservative?" (1 = <i>liberal</i> , 10 = <i>conservative</i> ).	The same measure as in the United Kingdom.	The same measure as in the United Kingdom.
Science literacy	We presented participants with 13 statements about scientific facts and asked them to indicate whether they were true or false to measure science literacy (e.g., "The earliest humans lived at the same time as the dinosaurs," "The oxygen we breathe comes from plants"). We adapted the items from previous studies (Zarieczna, Bertlich, et al., 2023).	The same measure as in the United Kingdom.	The same measure as in the United Kingdom.

controlling for demographics (age, gender), education variables (science literacy, science training, years spent in formal education), and worldview variables (political conservatism, spirituality, religious orthodoxy, religious upbringing). We used multilevel modeling with an aim of accounting for the fact that our data came from different countries. It is important to note that although we included *country* as the contextual variable, its estimated variance may not be related only to the cross-country context. This is because we conducted each study at different time points. For this reason, we were not interested in making inferences about any inferences about the random structure of the model (Gomes, 2022).

Third, we additionally tested the extent to which relative religious belief over science predicted compatibility judgments. We also tested this with a multilevel model across countries. This analysis would illustrate whether perceptions of compatibility between science and religion involve believing in science and religion to the same extent.

## Results

### Confirmatory Factor Analysis

To test the original two-factor solution (big picture explanations and human–world interactions) of science–religion compatibility scale (Leicht et al., 2022), we ran confirmatory factor analyses. We used full maximum likelihood estimation with standardized latent factors to account for nonnormality. To judge the global model fit, we used the following criteria: (a) root-mean-square error of approximation (RMSEA) values close to .06 or below, (b) standardized root-mean-square residual (SRMR) close to .08 or below, and (c) comparative fit index (CFI) values of .90 or greater (Brown, 2015). Confirmatory factor analysis with the two-factor solution showed largely appropriate model fit in the British:  $\chi^2(19) = 41.55, p < .001$ , CFI = .991, RMSEA = .054, SRMR = .046; Dutch:  $\chi^2(19) = 50.06, p < .001$ , CFI = .961, RMSEA = .087, SRMR = .065; and Kazakhstani sample:  $\chi^2(19) = 56.19, p < .001$ , CFI = .983, RMSEA = .068, SRMR = .041.<sup>3</sup>

### Measurement Invariance

Second, we tested for model equivalence across the United Kingdom, Netherlands, and Kazakhstan. We assessed configural, metric, and scalar invariance of the compatibility scale (Chen, 2007). We found evidence for metric invariance, demonstrating that the factor loadings were equivalent across countries (see Table 3). Yet, scalar invariance did not hold, suggesting differences in item intercepts. However, as the aim of the present study was not to compare mean differences between countries, we proceeded with the analyses.

### Multilevel Model

First, we collapsed across two factors of the science compatibility scale, as it showed high reliability in each country (see Table 1). Multilevel zero-order correlations between science–religion compatibility, belief in science, and religious belief are presented

<sup>3</sup> In addition, in an exploratory factor analysis conducted in each country separately, we found that belief in science and religious belief loaded onto independent factors.



**Table 2**  
*Samples' Characteristics*

Variable	United Kingdom	Netherlands	Kazakhstan
<i>N</i>	230	249	205
Science–religion compatibility	<i>M</i> = 4.02 <i>SD</i> = 2.02	<i>M</i> = 3.43 <i>SD</i> = 1.58	<i>M</i> = 3.79 <i>SD</i> = 2.02
Belief in science	<i>M</i> = 5.13 <i>SD</i> = 1.31	<i>M</i> = 3.91 <i>SD</i> = 1.32	<i>M</i> = 3.99 <i>SD</i> = 1.23
Religious belief	<i>M</i> = 2.13 <i>SD</i> = 1.52	<i>M</i> = 2.26 <i>SD</i> = 1.47	<i>M</i> = 3.29 <i>SD</i> = 1.76
Spirituality	<i>M</i> = 2.77 <i>SD</i> = 1.52	<i>M</i> = 3.08 <i>SD</i> = 1.48	<i>M</i> = 3.69 <i>SD</i> = 1.49
Religious orthodoxy/fundamentalism	<i>M</i> = 2.39 <i>SD</i> = 1.52	<i>M</i> = 2.15 <i>SD</i> = 1.25	<i>M</i> = 3.44 <i>SD</i> = 1.92
Religious upbringing	<i>M</i> = 2.60 <i>SD</i> = 1.52	<i>M</i> = 2.15 <i>SD</i> = 1.25	<i>M</i> = 3.06 <i>SD</i> = 1.31
Conservatism	<i>M</i> = 4.46 <i>SD</i> = 2.03	<i>M</i> = 3.18 <i>SD</i> = 1.52	<i>M</i> = 4.20 <i>SD</i> = 2.20
Science literacy	<i>M</i> = 10.97 <i>SD</i> = 1.65	<i>M</i> = 11.39 <i>SD</i> = 1.39	<i>M</i> = 10.10 <i>SD</i> = 1.97
Science training (1: no)	No: 176	No: 186	No: 173
Age (years)	<i>M</i> = 43.64 <i>SD</i> = 14.12 Range: 21–90	<i>M</i> = 20.12 <i>SD</i> = 2.56 Range: 18–40	<i>M</i> = 31.97 <i>SD</i> = 9.00
Gender (0: men)	Women: 115 Men: 114 Prefer not to say: 1	Women: 200 Men: 37 Nonbinary: 8 Agender: 1 Prefer not to say: 2 Missing: 1	Women: 96 Men: 94 Missing: 15
Formal education	<i>M</i> = 16.10 <i>SD</i> = 3.38	<i>M</i> = 14.88 <i>SD</i> = 1.94	<i>M</i> = 16.21 <i>SD</i> = 4.08
Religious affiliation	Christian: 30.1% Atheist: 41% Agnostic: 15.7% Muslim: 2.2% Jewish: 1% Hindu: .9% Buddhist: .4% Other: 8.7%	Christian: 29%, Atheist: 35% Agnostic: 19% Muslim: 3%, Buddhist: 4% Hindu: 2% Jewish: 1% Other: 7%	Muslim: 48% Atheist: 15% Agnostic: 15% Christian: 14% Buddhist: 1%, Other: 7%

in Table 4 (see Online Supplemental Materials for correlations between all variables).

We then conducted a multilevel multiple regression analysis of science–religion compatibility perceptions across all countries (see Table 5), controlling for education, demographic, and worldview variables. All variables were mean centered. We then computed variance inflation factors for all variables, indicating no multicollinearity for religiosity (variance inflation factors < 3) and science-related variables (variance inflation factors < 2).

As hypothesized, we found that religious belief predicted high compatibility judgments. In turn, belief in science predicted low compatibility (see Tables 6–8 for individual analyses in each country).<sup>4</sup> We additionally found stronger religious orthodoxy and political conservatism involved stronger compatibility perceptions. It is worth noting that the contextual variable (i.e., related to different countries and study time points) accounted for 4% of variance in the dependent variable.

Further, it is also important to note that although religious belief is strongly associated with compatibility perceptions, we also found that religious belief is negatively correlated with belief in science (see Table 4). This suggests that perceptions of science–religion compatibility are not a combination of high belief in science and high religious belief.

### Exploratory Analysis of Religious Belief Relative to Belief in Science

Following up on the previous analyses, we further explored whether compatibility perceptions were associated with believing in science and religion to the same extent. To test this, we computed the belief index by subtracting participants' scores for belief in science from the scores for religious belief. Hence, high scores on this index refer to higher religious belief over belief in science, and low scores indicate higher belief in science over religious belief, while 0 indicates equal belief in science and religion (either low, moderate, or high belief in both). We estimated a multilevel model, whereby we introduced belief index as a predictor, compatibility perceptions as an outcome, and all the control variables. The results are presented in Table 9 and Figure 1. We found that belief index significantly predicted compatibility perceptions with a linear trend,<sup>5</sup> suggesting that higher religious belief relative to science involved higher compatibility perceptions.

<sup>4</sup> Controlling for participants' religious/nonreligious identity (categorized based on the religious affiliation measure) did not impact the results.

<sup>5</sup> We found that linear trend explained the data better than quadratic trend (see Figure 1).

**Table 3***Measurement Invariance Tests Across the United Kingdom, the Netherlands, and Kazakhstan*

Invariance	$\chi^2(df)$	$\Delta\chi^2(\Delta df)$	CFI	$\Delta CFI$	RMSEA	$\Delta RMSEA$	SRMR	$\Delta SRMR$
Configural	156.80*** (57)		.980		.071		.047	
Metric	173.05*** (69)	18.210 (12)	.979	-.002	.068	-.004	.060	.013
Scalar	194.72*** (81)	28.003** (12)	.974	-.004	.068	.001	.063	.003

Note.  $N = 683$ ;  $N_{UK} = 229$ ;  $N_{NL} = 249$ ;  $N_{KZ} = 205$ . CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.

\*\* $p < .01$ . \*\*\* $p < .001$ .

### General Discussion

Both science and religion can serve as meaning systems that provide answers to existential and ontological questions but do so using different kinds of epistemologies. In the current research, we examined the extent to which endorsing science and religion, as discrete meaning systems, was associated with science–religion compatibility perceptions across three countries that vary in religious affiliations and degree of religiosity: the United Kingdom, Netherlands, and Kazakhstan. As religious people apply science and religion as useful meaning systems and tend to endorse the compatibility narrative between science and religion (Davoodi & Lombrozo, 2022; Leicht et al., 2022), we predicted that religious belief would be uniquely associated with perceptions of high compatibility between science and religion. In contrast, as by definition it is possible to fully endorse science but reject all religious belief, we expected that belief in science would be associated with conflict perceptions.

We found support for both our primary hypotheses. First, stronger religious belief (operationalized as religious belief, without contrasting religion with science) was associated with greater perceptions of science–religion compatibility across countries. Second, stronger belief in science (operationalized as a belief in science as a way of knowing, without comparing science to religion) was negatively related to endorsements of science–religion compatibility.

Overall, these findings demonstrate that religious belief and belief in science present differential outcomes on judgments of science–religion compatibility. We extend Johnson et al.'s (2023) results by demonstrating that high belief in science does not always involve high compatibility perceptions—in contrast, it is more likely to accompany conflict perceptions when studied in more diverse samples of religious and nonreligious participants. Furthermore, it seems that perceptions of compatibility between science and religion do not simply reflect valuing both science and religion to the same extent, which could have been expected by definition. We found direct support for this reasoning in an exploratory analysis: Higher religious belief over belief in science was associated with increased compatibility perceptions, while higher belief in science

over religion was associated with increased conflict perceptions. This linear trend further demonstrates that compatibility perceptions uniquely depend on religious belief, while conflict perceptions depend on belief in science, at least when belief in science is operationalized as a way of knowing. Zero-order correlations also support this reasoning—we found that although religious belief was strongly associated with compatibility perceptions, it was negatively associated with belief in science. More recent evidence provides a potential explanation behind this paradox when measuring religiosity as a self-identified categorical variable (Jackson et al., 2024). Self-identified religious individuals were found to see less instrumental and explanatory value in either science or religion, compared to nonreligious individuals who saw high value solely in science. Likewise, individuals who endorse the compatibility perspective tend to believe that neither science nor religion can fully explain the world, but both offer accurate ways of knowing (Longest & Uecker, 2021). Therefore, prioritizing religious belief to find meaning may be associated with more flexibility and openness to incorporating religious and scientific ways of knowing, rather than relying only on religious belief. As such, our findings indicate that religious believers likely apply both science and religion as unified and complementary meaning systems to find answers to existential and ontological questions, while science believers are likely to apply only science.

### Religious Belief and Compatibility

Our findings contribute to the growing body of literature indicating that religious belief is robustly linked with perceptions of science–religion compatibility (Johnson et al., 2023; Leicht et al., 2022; Sharp et al., 2022), even when religious belief is conceptualized as a distinct meaning system separately from science. We further show that the religious belief–compatibility association generalizes beyond Western and Christian countries, as we found evidence for this association also in Kazakhstan, a predominantly Muslim country. These findings also hold true even when religious belief is

**Table 4***Multilevel Zero-Order Correlations Across Countries With 95% Confidence Intervals*

Variable	1	2	3
1. Belief in science	—		
2. Religious belief	-.36 [-.42, -.29]***	—	
3. Science–religion compatibility	-.33 [-.39, -.26]***	.49 [.43, .55]***	—

\*\*\* $p < .001$ .

**Table 5***Multilevel Model of Science–Religion Compatibility Perceptions Across All Countries*

Predictor	$\beta$	95% CI	<i>p</i>
Age	0.03	[−0.06, 0.12]	.499
Gender (1: women)	0.08	[0.01, 0.15]	.024
Science training (1: no)	−0.00	[−0.08, 0.07]	.958
Science literacy	−0.05	[−0.12, 0.03]	.209
Formal education	−0.06	[−0.12, 0.01]	.098
Conservatism	0.13	[0.06, 0.20]	<b>.001</b>
Spirituality	0.06	[−0.02, 0.14]	.167
Religious orthodoxy	0.30	[0.21, 0.40]	<b>.001</b>
Religious upbringing	−0.01	[−0.08, 0.06]	.839
Belief in science	−0.11	[−0.19, −0.04]	<b>.004</b>
Religious belief	0.20	[0.09, 0.31]	<b>.001</b>
Random effects			
$\sigma^2$		.65	
$\tau_{00}$ country		.03	
ICC		.04	
$N_{\text{country}}$		3	
Observations		635	
Marginal $R^2$ /conditional $R^2$		.351/.378	

Note. The values in bold denote the significant effects.  $\alpha$  level adjusted = .01. CI = confidence interval; ICC = intraclass correlation coefficient.

operationalized as belief that religion is the best way of gaining truth about the world (see the study in the United Kingdom).

One reason that religious belief is so strongly associated with science–religion compatibility perceptions may be that scientific beliefs are widely accepted as a way of understanding nature and the world (Davoodi & Lombrozo, 2022). Science plays a central role in developing new technology and medicine with new scientific discoveries widely discussed in the media and implemented in practice (e.g., COVID-19 vaccines). Evidence demonstrates that religious believers generally show high trust in scientific sources of information, compared with sources such as religious leaders or governments (Hoogeveen et al., 2022; Zarzeczna, Hanel, et al., 2023). It is therefore

**Table 6***Multiple Regression Analysis of Perceptions of Science–Religion Compatibility in the United Kingdom, Controlling for Presentation Order of Belief in Science and Religious Belief Measures*

Predictor	$\beta$	95% CI	<i>p</i>
Measure order	0.05	[−0.06, 0.16]	.359
Age	0.04	[−0.07, 0.15]	.452
Gender	0.17	[0.05, 0.28]	<b>.004</b>
Science training (1: no)	0.01	[−0.10, 0.13]	.840
Science literacy	−0.07	[−0.19, 0.05]	.258
Formal education	−0.09	[−0.21, 0.02]	.110
Conservatism	0.15	[0.04, 0.26]	<b>.011</b>
Spirituality	0.09	[−0.05, 0.24]	.197
Religious orthodoxy	0.32	[0.16, 0.47]	<b>.001</b>
Religious upbringing	0.00	[−0.13, 0.13]	.999
Belief in science	0.00	[−0.13, 0.13]	.971
Religious belief	0.18	[0.02, 0.33]	<b>.023</b>
Observations		229	
Marginal $R^2$ /conditional $R^2$		.394/.360	

Note. The values in bold denote the significant effects. CI = confidence interval.

**Table 7***Multiple Regression Analysis of Perceptions of Science–Religion Compatibility in the Netherlands*

Predictor	$\beta$	95% CI	<i>p</i>
Age	−0.01	[−0.15, 0.12]	.839
Gender	−0.05	[−0.17, 0.08]	.486
Science training (1: no)	−0.07	[−0.20, 0.06]	.274
Science literacy	−0.10	[−0.22, 0.02]	.110
Formal education	0.00	[−0.14, 0.14]	.990
Conservatism	0.08	[−0.05, 0.21]	.242
Spirituality	0.06	[−0.09, 0.21]	.408
Religious orthodoxy	0.07	[−0.09, 0.22]	.407
Religious upbringing	0.03	[−0.11, 0.18]	.629
Belief in science	−0.13	[−0.23, −0.03]	<b>.011</b>
Religious belief	0.21	[0.02, 0.40]	<b>.029</b>
Observations		237	
Marginal $R^2$ /conditional $R^2$		.225/.187	

Note. The values in bold denote the significant effects. CI = confidence interval.

likely that due to the widespread accessibility, use, and impact of science on everyday life, religious individuals incorporate scientific ideas into their primary religious meaning system to some extent. As such, it follows that religious people should also see science and religion as complementary. Indeed, religious individuals may be motivated to see greater compatibility as to maintain coherence between their personal spiritual beliefs and the scientific principles venerated by society. Coherence refers to the logical consistency and unity of a belief, and when it is violated, people experience a state of aversive arousal that prompts engagement in compensatory behaviors to restore meaning (see Proulx et al., 2012, for an overview). As religious people are likely to draw on science and religious meaning systems, they should be motivated to maintain a compatible attitude in defense of these meaning systems. Overall, having more than one meaning system to draw on flexibly may further buffer from meaning violations and preserve perceived coherence (J. L. Preston & Epley, 2009; Proulx, 2020). However, it is possible that religious people value science and have positive attitudes toward science but may

**Table 8***Multiple Regression Analysis of Perceptions of Science–Religion Compatibility in Kazakhstan*

Predictor	$\beta$	95% CI	<i>p</i>
Age	−0.09	[−0.23, 0.05]	.188
Gender	−0.03	[−0.16, 0.09]	.613
Science training (1: no)	0.07	[−0.05, 0.19]	.250
Science literacy	0.06	[−0.08, 0.19]	.430
Formal education	−0.03	[−0.16, 0.11]	.693
Conservatism	0.10	[−0.03, 0.23]	.124
Spirituality	0.01	[−0.15, 0.18]	.856
Religious orthodoxy	0.31	[0.12, 0.51]	<b>.001</b>
Religious upbringing	−0.02	[−0.15, 0.12]	.791
Belief in science	−0.18	[−0.32, −0.05]	<b>.008</b>
Religious belief	0.32	[0.11, 0.54]	<b>.003</b>
Observations		168	
Marginal $R^2$ /conditional $R^2$		.482/.445	

Note. The values in bold denote the significant effects. CI = confidence interval.



**Table 9**

*Multilevel Model of Science–Religion Compatibility Perceptions Across All Countries as a Function of Belief Index (Higher Scores Indicate Higher Religious Belief Over Belief in Science)*

Predictor	$\beta$	95% CI	<i>p</i>
Age	0.03	[−0.06, 0.12]	.485
Gender (1: women)	0.08	[0.01, 0.15]	.026
Science training (1: no)	−0.00	[−0.08, 0.07]	.926
Science literacy	−0.04	[−0.12, 0.03]	.218
Formal education	−0.06	[−0.12, 0.01]	.099
Conservatism	0.13	[0.06, 0.20]	.001
Spirituality	0.07	[−0.02, 0.15]	.114
Religious orthodoxy	0.32	[0.23, 0.41]	.001
Religious upbringing	0.00	[−0.07, 0.07]	.989
Belief index	0.24	[0.14, 0.33]	.001
Random effects			
$\sigma^2$		.65	
$\tau_{00}$ country		.03	
ICC		.04	
$N_{\text{country}}$		3	
Observations		635	
Marginal $R^2$ /conditional $R^2$		.348/.372	

Note. The values in bold denote the significant effects.  $\alpha$  level adjusted = .01. CI = confidence interval; ICC = intraclass correlation coefficient.

not consider science as the “best” epistemology (i.e., the way we conceptualized belief in science in the present research) in answering existential and ontological questions. In these studies, we also found that seeing compatibility is primarily associated with religious belief

rather than believing in science and religion to similar extents. Future research should explore other aspects of belief in science that religious people value and which may contribute to perceptions of increased compatibility.

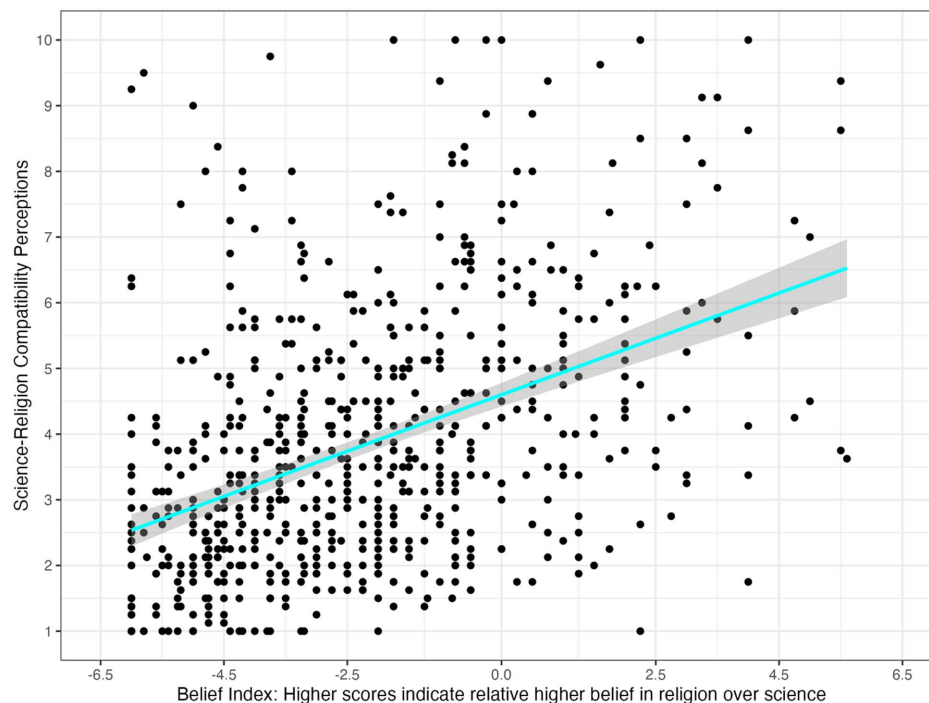
### Belief in Science and Conflict

In contrast to religious belief, we found that belief in science (independent of religious belief) was associated with endorsing low science–religion compatibility. Why do we see this difference between religion and science in predicting their compatibility? One reason may be that it is easier to integrate scientific beliefs into a religious explanatory framework than the other way around. Science is based solely on physical laws and principles, but religious belief incorporates supernatural forces and mechanisms into a physical universe. Strict scientific principles of materialism and positive evidence may be difficult to reconcile with faith-based ways of knowing and divine mechanisms. As a result, strong science believers may not perceive religion as having any additional explanatory value beyond their primary scientific meaning system.

A potential negative implication of using science as the sole meaning system is it may diminish overall explanatory value in terms of existential issues, for example, lower meaning in life. Stronger religious belief predicts significantly higher meaning in life (in terms of coherence and significance; Folk et al., 2023), which implies that those with no religious belief could suffer a drought of meaning. However, nonreligious people can also have spiritual experiences (J. L. Preston & Shin, 2017), and nonreligious people

**Figure 1**

*Perceptions of Compatibility Between Science and Religion as a Function of Belief Index (With High Scores on Belief Index Indicating Higher Relative Religious Belief Over Belief in Science)*



Note. See the online article for the color version of this figure.

who feel greater spirituality through science also report greater overall feelings of meaning in life and well-being (J. L. Preston et al., 2023). As such, it seems that belief in science can function as an important meaning system under certain circumstances independently of religious belief.

Notably, the effect of belief in science on low compatibility was weaker, and less consistent across countries, compared to the effect of religious belief on high compatibility. This may suggest that perceptions of the science–religion relationship may be less of a central or important belief to science believers compared to religious believers. Future research should directly examine this issue. In terms of the belief in science measure, we adapted Farias et al.’s (2013) items to reflect an epistemic belief about science being the best way of knowing. It is worth noting that extreme scores on this measure reflect greater scientism or materialism, and framing science as a “best” way of knowing in these items could implicitly imply that other ways of knowing (including religion) are not “best.” However, we believe that such comparisons arise only if they already exist in participants’ minds.

Further, although we included countries as a contextual variable in our analysis, we also conducted each study at different time points, so the estimated intraclass correlation of 4% may not only reflect differences in cross-country contexts. It is therefore not possible to estimate unique variance associated with cultural contexts based on these results alone, but this would be a valuable avenue for further study to reflect on cultural effects. Further, although we find support for our prediction that belief in religion and belief in science differ in their relation to perceived compatibility, subsequent research should directly investigate the causes of this difference, including motivations and epistemological reasons.

Finally, although we recruited our participants from diverse countries, the samples from the Netherlands and Kazakhstan mainly represented students and university employees. This might limit the generalizability of the current findings to other populations. Future research should replicate these findings using representative samples.

## Conclusion

Across three countries with diverse religious and nonreligious samples, we found that believers in science and religion have different views on the relationship between science and religion. While religious belief contributes to perceptions of greater science–religion compatibility, belief in science predicts lower compatibility.

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Received January 25, 2024

Revision received August 5, 2024

Accepted August 15, 2024 ■