

Globalization Predicts Reduced Religiosity Across Time and Cultures

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### **Abstract**

Recent increases in nonreligion are a puzzling development given the longstanding stability of religion throughout human history. How can we explain this recent shift away from our species' religious roots? The present research examines the role of globalization in this dynamic. Increasing globalization brings the promise of interaction and integration among a diverse set of people worldwide and may increase acceptance of different religions. This religious acceptance, in turn, may disrupt the social learning processes that are critical to reinforcing religious belief on a large scale. We test these predictions through a series of multi-method studies. Using international and longitudinal data, we find that national globalization is related to reduced individual religiosity (Study 1) and that globalization precedes decreases in religiosity over time (Study 2). This relationship replicates within the United States, with residents of more interconnected counties displaying lower levels of religiosity (Study 3). A novel manipulation of globalization leads people to assume that others will find religion less important (Study 4), and increased religious acceptance in the face of globalization mediates this effect (Studies 4 and 5). Further, experimentally manipulating religious acceptance causes decreased religiosity (Study 6). Together, these studies provide evidence that globalization can cause reduced religiosity, and that increased religious acceptance plays a key role in this process.

*Keywords:* Religion, Globalization, Culture, Social Learning

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Societies are more interconnected today than ever before. Cultural products including food, television, and music are consumed thousands of miles from their places of origin. Millions of flights per year carry people across oceans and nations in a matter of hours. Smartphones send international news to the pockets of people in every corner of the world. The internet allows strangers, friends, and family to communicate instantly regardless of location. Peoples, ideas, cultures, and beliefs are in constant flux worldwide, impacting every facet of life, including religion. A person walking through their globalized hometown might notice a Christian church, a Hindu temple, and a Jewish synagogue all within a few miles of each other, and may have acquaintances, friends, coworkers, or family members – both near and far –who follow a different religious tradition than their own.

Just a few centuries ago, the world was a very different place. Many of our ancestors lived in small, autonomous communities, where social ties were largely determined by kinship networks (Fox & Robin, 1983; Levi-Strauss, 1969). People had little way to know of—much less interact with—far-flung people and cultures across the world. Local norms, traditions, and beliefs were exactly that: local. Without extensive intergroup contact, societies developed and passed on their own beliefs over generations (Jordan & Shennan, 2009). Instead of witnessing diverse religions in one’s hometown, people would have adhered to local religious customs that were normative for the whole community (Dunbar, 2013).

Globalization has drastically changed people’s exposure to diverse cultures and religions (Chiu & Kwan, 2016). In contemporary nations, most people are at least passingly familiar with numerous world faiths and have had direct interactions with people from a range of different religious traditions. How has this continuous process of increased globalization over the past decades shaped religious belief today? Here we integrate literatures from social psychology,

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cultural evolution, and the psychology of religion to test whether globalization is contributing to declines in religiosity. We predict that, as globalization brings diverse religions into increased contact, it may foster inter-religious acceptance, which may in turn dilute religious belief. In particular, when people believe that multiple religions can coexist without contradiction, the persuasive power of any one religion may decline. Globalization may therefore explain why some groups have become increasingly non-religious over the last century, and why some people decide to abandon the faiths that were so important to their ancestors.

### **Trends in Religiosity and Theories of Secularization**

In recent decades, many countries around the world have documented surprisingly similar trends of secularization. In the Netherlands, the percentage of people who do not identify with a religion increased from 45% in 2010 to 53% in 2018 (Statistics Netherlands, 2019). The years between 2005 and 2012 saw a 21% decrease in religious identification in Switzerland and France, a 17% decrease in Iceland, and a 10% decrease in Austria (WIN-Gallup International, 2012). Sweden and the Czech Republic are also known for large numbers of irreligion, with 50% and 48% of their 2012 populations identifying as nonreligious, respectively (WIN-Gallup International, 2012). This trend is observable beyond Europe: for example, the percentage of Americans who do not identify with a religious group has increased from 2% in 1948 to 20% in 2020 (Gallup, 2020). Canada shows a comparable growth in the nonreligious, increasing from 4% in 1971 to 24% in 2011 (Pew, 2013). Similar trends have been documented across Latin America and the Caribbean (Pew, 2015). In fact, the nonreligious make up the third largest religious group globally—behind Muslims and Christians—at 16.3% of the world’s population (Pew, 2012).

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Although this trend of secularization is dramatic and widespread, it is not happening everywhere. Nations such as Thailand, where 94% of people identify as religious, Bangladesh (93%), Fiji (92%), and South Africa (91%) have remained quite religious (WIN/Gallup, 2014). These differences in national religiosity may continue to widen, with areas including the Asia-Pacific region and Sub-Saharan Africa projected to become *more* religious by 2050 while Europe, North America, and South American became *less* religious (Pew, 2015).

Why has secularization been so rapid in some regions but largely absent in others? A number of theories across several fields, including psychology and sociology, attempt to explain why some places have begun to secularize and why others have not. One of the most successful theories of secularization is that religiosity declines in response to increased existential security (Norris & Inglehart, 2004); as industrialized, wealthy nations and secular institutions provide for the everyday health and stability of their citizens, religious motivations wane. This theory has corollaries in social psychology. For example, work on compensatory control (Kay et al., 2008; 2009) suggests a hydraulic relationship between religion and secular institutions, such that people turn to religion and belief in a controlling God when secular institutions (such as the government) seem weaker, but fall away from religion when secular institutions are strong and reliable. Accordingly, people who live in more developed and industrialized areas of the world that have reliable secular institutions would show lower levels of religiosity.

Among the secular institutions that may quench religious motivations, science has attracted much attention. Many thinkers speculate that religion might be declining as a result of the rapid advancement of scientific understanding. This argument relies on the assumption that religion and science are mutually exclusive and diametrically opposed, at least psychologically speaking. This “rationalist” argument proposes that the Enlightenment’s emphasis on science,

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proof, and objectivity rendered religious claims unlikely, or at the very least unprovable (Berger, 1967; Martin, 1978; Weber, 1904; Wilson, 1969). Again, psychological research has lent evidence this tension between science and religion, finding that people think of science and religion in a zero-sum sense (Preston & Epley, 2009; Preston et al., 2013), though emerging research challenges this notion (Jackson et al., 2020; Legare et al., 2012; McPhetres et al., 2020; Watts et al., 2020).

### *Globalization as a Novel Approach to Secularization*

Models of secularism based on existential security or the spread of science contribute critical insights to the rise of nonreligion. However, these theories focus exclusively on individual motivations for turning away from religion (e.g. reduced insecurity, faith in science) and ignore one of the main ways that people's religious beliefs are shaped: through social interactions with people in their communities. Individuals' own religious beliefs are heavily influenced by the beliefs they are exposed to, such as those demonstrated by their caretakers at a young age (Boyd et al., 2011; Gervais & Najle, 2015; Gervais et al., 2021; Harris & Koenig, 2006; Lanman & Buhrmester, 2017; Willard & Cingl, 2017). Religion is not simply shaped by feelings of existential security or faith in science; rather, it is also the product of exposure to religious norms and signals of religious commitment throughout one's life. It is this crucial aspect of the culturally transmitted nature of religion that previous theories of secularization fail to incorporate.

Because individual religiosity can be shaped by the behavioral and cultural models a person is exposed to, a more complete theory of secularization should integrate these social influences on religiosity. Studying globalization applies this crucial perspective to the question of secularization by allowing us to investigate how people's changing social and religious

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surroundings may shape nonreligion. Globalization brings different cultures and religious traditions into increased contact with each other, fundamentally reshaping the religious norms that people are exposed to. Extending previous theory on the cultural transmission of religion (Atran & Henrich, 2010; Gervais et al., 2011; Lanman, 2012), this diversity in religious cues should have downstream consequences for religiosity, and given the increasing influence of globalization worldwide (Gygli et al., 2019), it is essential to understand the profound impacts it may have on religion.

### **Globalization & Religious Acceptance**

To understand the relationship between globalization and religion, it is important to recognize how globalization changes culture. Globalization is commonly discussed in terms of its economic outcomes: namely, internationalizing production of goods, trade, and sales, and increasing the potential for cross-national business. But globalization also has an important impact on our social and political landscapes. Socially, globalization entails higher levels of immigration, tourism, and communication with people in other countries. Human innovations in travel (e.g., airplanes), communication (e.g., the internet), and international organizations (e.g., the European Union) have spurred along changes in these domains. Politically, globalization brings governments into increased contact with each other and allows for international treaties and political correspondence. These interactions fundamentally reshape the social fabric of globalized nations, and the resulting cultural shifts should have huge implications for religion.

One of the primary ways that globalization may shape religion is through the process of religious mixing. Available data shows that globalization and religious diversity are positively correlated (see Supplemental Materials for analysis). In practical terms, this means that people living in more globalized nations will have a higher likelihood of interacting with people who

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practice different religions than their own, and likely witness religious diversity at a higher rate than people in less globalized nations. Religious diversity could manifest in the day-to-day environment that people interact with, with places of worship from a variety of religions being more numerous and visible in globalized places, and with symbols of different religions apparent in the dress and jewelry of fellow citizens. It could also manifest at the structural level through educational systems that teach the history of various religions, as well as at the individual level in the daily interactions people have with friends, colleagues, neighbors, and family members who may practice different religions. Such religious diversity amounts to multiple religions being established within the cultural milieu, instead of just one or two publicly visible belief systems.

As globalization rises, in turn increasing religious diversity, how will people's attitudes towards different religious groups develop? While some theorize that the presence of religious diversity might lead to competition between different religions (Finke & Stark, 1988), this viewpoint lacks widespread empirical support (Chaves & Gorski, 2001). Instead, we propose that globalization will be associated with increased acceptance of diverse religious perspectives. This hypothesis is supported in part by contact theory research showing that when certain optimizing conditions are met, contact with outgroup members improves attitudes towards these outgroups (Allport, 1954, Lemmer & Wegner, 2015; Paluck, 2009; Pettigrew & Tropp, 2008). Relatedly, globalization predicts less prejudice towards a number of outgroups—including religious outgroups—when these conditions are met (Caluori et al., 2020), and people view themselves as more similar to outgroup members in more diverse settings (Bai et al., 2020). Further, longitudinal analyses find that initial negative reactions to increased religious diversity are countered by long-term shifts towards improved well-being and happiness in more diverse



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surroundings (Ramos et al., 2019). These findings suggest that as globalization puts more religions into contact with each other, members of these religions may become more accepting of each other.

We expect that an increased acceptance of other religions will in turn predict reduced religious belief. Thinkers like Emile Durkheim (1912) and Peter Berger (1967) theorized that religious pluralism—or the existence of multiple religions in the same place—would drive down religiosity by diminishing the power and perceived plausibility of any one religion (Chaves & Gorski, 2001; Norris & Inglehart, 2004). By eroding religious “exclusivism,” or the proposition that a certain religion is the only “truth,” the only acceptable path to salvation, etc. (Merino, 2010; Moser, 2011), religious acceptance may weaken conviction in any one religion. In other words, strong religious belief may emerge when there is one dominant religion within a society or culture, but as more and more religions become visible and begin exerting influence within a society—as would happen when acceptance of multiple religions is higher—the conditions that produce strong religious belief may erode. There are multiple potential explanations for why religious acceptance may cause these conditions to erode.

### *Learning Religion in a Globalized World*

One likely reason that religious acceptance could erode religiosity is that the acceptance of multiple religions may disrupt the social learning mechanisms that reinforce belief in one religion above and beyond other religions.

Social learning is the process of transmitting beliefs and behaviors through a progression of observations of and interactions with others (Heyes, 1994). We look to others in our societies to learn which behaviors and beliefs we should adopt, allowing us to forego the costly trial and error of individual learning (Boyd et al., 2011; Rendell et al., 2011). As applied to religion,

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research and theory suggest that religious beliefs are socially learned and scaffolded through repeated exposure to and consistent cues from behavioral models (Gervais & Najle, 2015; Gervais et al., 2011). Consistency is key—repeated cues in favor of the same religion lead cultural learners to adhere to that religion (Gervais et al., 2021; Langston et al., 2020; Lanman & Buhrmester, 2017). But when societies are more accepting of multiple religions, cues in favor of multiple religions may become more visible. Religious adherents to different traditions likely feel more comfortable openly practicing their religions when others in their society believe that multiple religions are acceptable. This widespread and visible cueing of multiple religious traditions and faiths may dilute cultural cues favoring the adoption of any one specific religion, destabilizing the scaffolding that reinforces religious belief.

Understanding the types of mechanisms that are responsible for transmitting religious beliefs and norms can help elucidate how the social learning of religion may be disrupted in conditions of high globalization and religious acceptance. Humans rely on social learning mechanisms to determine which information we should and should not incorporate into our own beliefs and behaviors (Kendal et al., 2018; Rendell et al., 2011). One such mechanism is prestige bias, or the tendency for people to attend to information transmitted from high-status behavioral models over lower-status behavioral models (Henrich & Gil-White, 2001; Kendal et al., 2018). Both children and adults are more likely to copy the behavior of models who receive attention from other people (Atkisson et al., 2012; Chudek et al., 2012; Henrich & Broesch, 2011; Jiménez & Mesoudi, 2019), implying that people will be motivated to adopt the religious beliefs and practices of high-status members of society. Another mechanism—conformist bias—describes the inclination for people to adopt the beliefs and behaviors that are most frequently demonstrated by others around them (Henrich & Boyd, 1998; Kendal et al., 2018; Muthukrishna

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et al., 2015). This work suggests that people will adhere to the religious traditions that are displayed by a large number of people in their society.

Credibility enhancing displays (CREDS)—or costly behaviors that demonstrate legitimate commitment to something (Henrich, 2009)—help us discern genuine cues of religious commitment from more performative cues. The discussion of CREDS emerged as a framework for explaining when and why people believe in supernatural agents (Henrich, 2009; Lanman, 2012), proposing that people are more likely to be convinced by another person's profession of faith if it is accompanied by an action that would be costly to that person if they didn't truly believe what they said (e.g. unpleasant rituals, sacrifices; Henrich, 2009; Lanman, 2012). Even more quotidian costly displays of faith – such as donations of time and money to religious groups—can predict individuals' levels of belief (Gervais et al., 2020; Langston et al., 2020; Lanman & Buhrmester, 2017; Maij et al., 2017; Willard & Cingl, 2017). To a naïve social learner, a potentially costly action taken in the name of a religion (especially by an elite) is a potent cue promoting belief in that religion, whereas a lack of CREDS in favor of that religion could demotivate belief in that religion.

In a homogenous society where people believe that only their own religion is acceptable, cultural learners would be flooded with consistent cues favoring the same religion. When a social learner witnesses their fellow society-members and elites practice the same rituals and pray to the same gods, chances are this person will adopt those beliefs and practices for themselves (Gervais et al, 2021; Langston et al., 2020; Lanman & Buhrmester, 2017). However, in a society where multiple religions are both visible and are accepted, cues in favor of religion in general may be just as high, but cues in favor of any one specific religion would be drowned out. The presentation of varied and inconsistent cues may make it more to develop a committed belief in

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any one religion. We are not proposing that individuals in globalized places will glance around, notice increased religious diversity, and then decide that their faith is no longer convincing. Rather, through gradual shifts in the surrounding culture and the norms that are critical for upholding widespread belief, we may see a gradual weakening in the cues that are central to fostering strong, committed belief within communities. The acceptance of multiple religions that follows globalization might thereby disrupt the consistent cultural cues needed to reinforce religiosity.

### **Current Research**

Bringing these past literatures into conversation with current-day trends in globalization, we predict that globalization reduces religiosity. Specifically, this may happen through a process of increased religious acceptance, or the belief that multiple religions should be accepted and can be correct simultaneously. This acceptance of multiple religions may in turn erode religiosity.

We test these hypotheses across six studies that draw upon a variety of methods. In Study 1, we use archival data from 58 nations around the world to model the relationship between globalization and religiosity, and in Study 2 we test whether national levels of globalization can predict changes in religiosity over time. In Study 3, we use rich county-level social media data from the United States to test whether the same pattern emerges within one country that emerges across countries. In Studies 4 and 5 we use a novel manipulation of globalization to test its causal effects on religiosity and to test our hypothesized mechanism of religious acceptance. In Study 6 we experimentally manipulate religious acceptance—our hypothesized mediator—in order to more rigorously test the causal pathway from religious acceptance to religiosity.

Together, these studies help shed light on the psychological processes underlying large-scale trends in nonreligion. Globalization constitutes a massive shift in the religious cues and

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norms people are exposed to, and this research contributes a novel understanding of how cultural surroundings can shape individual religious beliefs.

### **Study 1**

Our first study tested for a naturally occurring relationship between globalization and religiosity. We predicted that individuals living in more globalized nations would report lower levels of religiosity. We relied on archival data to test this correlational hypothesis.

### **Methods**

We combined data from multiple archival sources to test whether nation-level globalization can predict individual-level religiosity. We compiled a final dataset of national globalization and individual religiosity that included responses from 85,998 individuals in 58 countries. This data has a multilevel structure, with individual-level data on religiosity nested within nation-level data on globalization.

### ***Measures***

*Religiosity.* We drew religiosity data from the sixth wave of the World Values Survey. This wave of the survey was conducted between 2010-2014, and included a question asking people to indicate how important religion is in their lives, from 1 (Very important) to 4 (Not at all important). We reverse-coded this item so that higher scores indicated higher religiosity.

*Globalization.* The KOF Swiss Economic Institute (Dreher, 2006) releases yearly globalization scores for over 200 countries based on metrics of each country's economic globalization (e.g., trade in goods and services), social globalization (e.g., international tourism, study abroad, migration), and political globalization (e.g., number of embassies and international NGOs). Globalization scores can range from 0 to 100, with higher numbers reflecting more

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globalization. We pulled globalization scores from the 2014 report to match the most recent year of Wave 6 of the World Values Survey.

*Covariates.* We controlled for national metrics of GDP per capita, population density (people per square km of land), and individual respondents' educational attainment, as these could covary with globalization and religiosity (Hungerman, 2014; Norris & Inglehart, 2004; Schwadel, 2015; Storm, 2017). Indicators of GDP per capita and population density in 2014 were retrieved from the World Bank. Individual educational attainment was measured using a WVS question asking people to identify their highest level of education, ranging from 1 (No formal education) to 9 (University-level education, with degree). Including these control variables reduced our effective sample size to 80,002 individuals within the same 58 nations as our first analysis due to inconsistent responding to the WVS education item.

### **Results**

We fit a random intercepts multilevel model with individual responses nested within countries that regressed individual-level religiosity on nation-level globalization. All variables were standardized prior to analysis to account for vastly different scales of measurement, so estimates represent standardized regression coefficients. As predicted, results showed a negative relationship between globalization and religiosity such that individuals in more globalized nations reported that religion was less important to them. See Table 1 for full model results, and Figure 1 for a depiction of this relationship with individual responses aggregated to the country level.

Next, we fit the same model and added relevant covariates. The negative relationship between globalization and religiosity was robust to controlling for GDP per capita, population density, and educational attainment (see Table 1, Model 2). Finally, to control for

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interdependencies between geographically close countries, we fit a model specifying random intercepts for 20 world regions and for countries nested within these 20 world regions, along with all control variables. The negative relationship between globalization and religiosity remained significant in this model (see Table 1, Model 3).

**Table 1**

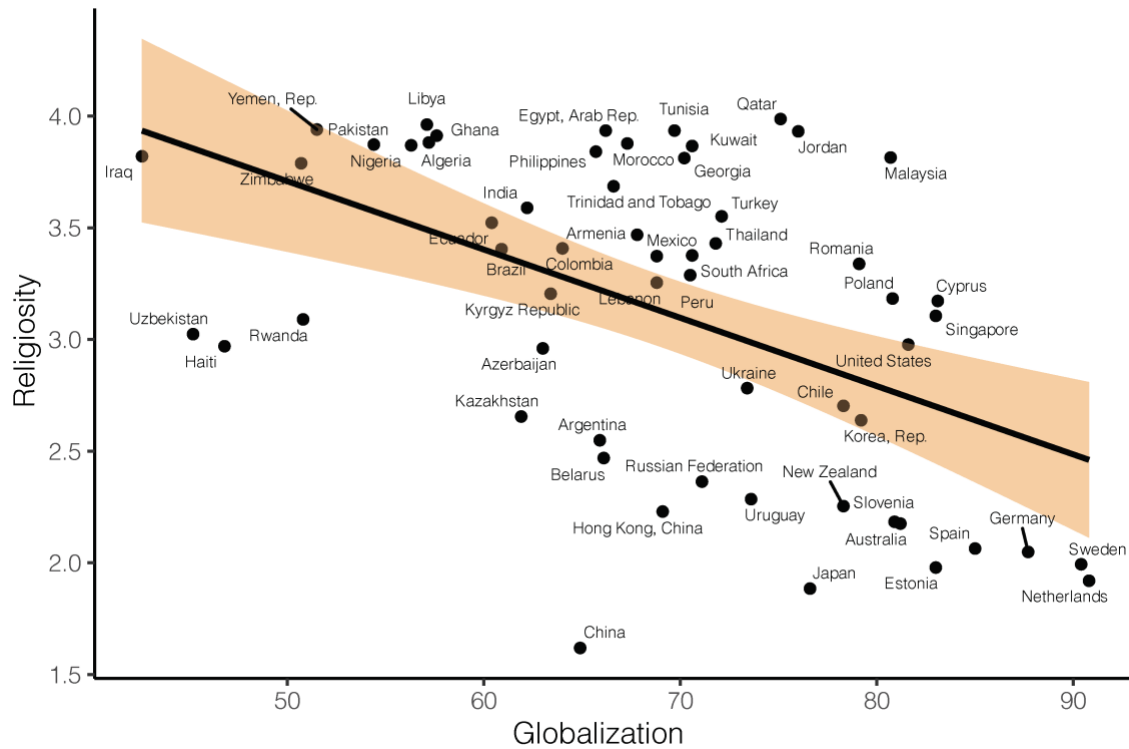
*Regression results for models predicting religiosity across nations*

<i>Predictors</i>	<b>Model 1</b>			<b>Model 2</b>			<b>Model 3</b>		
	<i>Estimate</i>	<i>95% CI</i>	<i>p</i>	<i>Estimates</i>	<i>95% CI</i>	<i>p</i>	<i>Estimate</i>	<i>95% CI</i>	<i>p</i>
(Intercept)	0.02	-0.13, 0.17	0.807	0.02	-0.13, 0.16	0.840	-0.10	-0.33, 0.13	0.395
Globalization	-0.33	-0.47, -0.18	<b>&lt;0.001</b>	-0.24	-0.44, -0.05	<b>0.015</b>	-0.17	-0.33, -0.01	<b>0.035</b>
GDP Per Cap.				-0.11	-0.32, 0.09	0.277	-0.03	-0.19, 0.13	0.720
Pop. Density				-0.01	-0.17, 0.15	0.875	-0.02	-0.14, 0.10	0.744
Education				-0.06	-0.06, -0.05	<b>&lt;0.001</b>	-0.06	-0.06, -0.05	<b>&lt;0.001</b>
ICC	0.37			0.37			0.37		
N	58 Country			58 Country			20 Region 58 Country		
Observations	85998			80002			80002		
Marginal R <sup>2</sup> / Conditional R <sup>2</sup>	0.105 / 0.435			0.118 / 0.442			0.047 / 0.402		

*Note.* Estimates are standardized regression coefficients. Marginal R<sup>2</sup> is based on fixed effects only; Conditional R<sup>2</sup> is based on both fixed and random effects.

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**Figure 1**



## *Relationship Between Globalization and Religiosity Across 57 Nations*

*Note.* Individual religiosity scores were aggregated to the nation level for plotting purposes.

Band reflects 95% confidence interval.

## **Discussion**

Using standard archival data sources, we found a negative relationship between globalization and religiosity across 58 diverse nations, and this relationship holds when relevant control variables are added to the model. Our next study expanded on this analysis to test whether globalization can predict national trajectories of religious belief over time.

## **Study 2**

Study 2 tested whether globalization predicts declines in religiosity over time, again using archival data. Specifically, we predicted that nations that were more globalized in 1990—



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when the World Values Survey began asking how important religion was to participants—would show decreases in religiosity over time, whereas countries that were less globalized would not.

### **Methods**

We combined data from the longitudinal World Values Survey and the KOF Swiss Economic Institute to build a dataset of globalization in 1990 and of religiosity over the five ensuing waves of the WVS. We compiled a final dataset with self-reported importance of religion from 278,696 individuals from a total of 78 nations and five waves of the WVS. This dataset also included globalization scores for each nation from the first year the WVS asked about religious importance (1990).

### ***Measures***

*Religiosity.* We drew data on individual religiosity from waves two through six of the WVS as the WVS did not ask about religious importance until wave two. The question about religious importance was the same across all waves, asking people to indicate how important religion is in their lives from 1 (Very important) to 4 (Not at all important). We reverse-coded this item so that higher scores indicated higher religiosity.

*Globalization.* We used the KOF Swiss Economic Institute's 1990 scores of globalization in this analysis. We used data from 1990 because it corresponded exactly to the first year of wave two of the WVS. Therefore, globalization data from 1990 allowed us to test whether a nation's level of globalization at the beginning of wave two of the WVS could predict its trajectory of religious increase or decrease over the subsequent waves of the WVS.

*Covariates.* As in Study 1, we controlled for national metrics of GDP per capita, population density (people per square km of land), and educational attainment (individual responses to the same WVS education item as in Study 1, aggregated to the country level) from

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the year 1990 to match the year of globalization scores. Indicators of GDP per capita and population density were retrieved from the World Bank.

### Results

We fit an interaction model to test whether globalization in 1990 (referred to as “initial globalization”) interacted with time—measured here as waves of the WVS—to predict religiosity. Measures of religiosity and globalization were standardized prior to analysis due to their vastly different scales of measurement. For ease of interpretation, we did not standardize the wave variable, so any effects of wave can be interpreted as the standard deviation changes in the dependent variable associated with a one-wave increase in time. We aggregated religiosity scores to the country level, with countries nested within WVS wave. Due to the multilevel structure of our data, we specified a multilevel model with random slopes and random intercepts allowing the relationship between wave and religiosity to vary by country. We considered other types of analyses for this data, but given the amount of missingness (few countries have data for every wave), we decided to use a multilevel model approach, which is less sensitive to missing data than longitudinal approaches like latent growth curve modeling or autoregressive cross-lagged models.

Results of this analysis showed a significant interaction between 1990 globalization scores and wave in predicting religiosity (see Table 2, Model 1 for full results). We next performed simple slopes analyses to probe this interaction. Specifically, we were interested in the effect of wave (time) at various levels of globalization, which can tell us whether more or less initially-globalized nations became more or less globalized over time. Results of these analyses show that for nations with high (+1 SD) levels of initial globalization, the relationship between wave and religiosity was negative,  $\beta = -.06$ ,  $p = .001$ , suggesting that more initially-

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globalized nations became less religious over time. For nations with low levels of initial globalization, however, the relationship between wave and religiosity was marginal and positive,  $\beta = -.04, p = .06$ . There was no relationship between wave and religiosity for nations with an average level of initial globalization,  $\beta = -.01, p = .58$ . See Figure 2 for depictions of globalization and of change in religiosity over time by country.

**Table 2**

*Multiple regression results for models predicting religiosity over WVS waves*

<i>Predictors</i>	<b>Model 1</b>			<b>Model 2</b>			<b>Model 3</b>		
	<i>Estimate</i>	<i>95% CI</i>	<i>p</i>	<i>Estimate</i>	<i>95% CI</i>	<i>p</i>	<i>Estimate</i>	<i>95% CI</i>	<i>p</i>
(Intercept)	0.18	-0.06, 0.42	0.137	0.35	0.11, 0.59	<b>0.004</b>	0.22	-0.15, 0.59	0.234
Globalization	-0.27	-0.50, -0.03	<b>0.027</b>	0.12	-0.21, 0.46	0.470	0.22	-0.07, 0.51	0.142
Wave	-0.01	-0.04, 0.02	0.573	-0.02	-0.05, 0.01	0.241	-0.02	-0.06, 0.02	0.386
Globalization* Wave	-0.05	-0.08, -0.02	<b>0.001</b>	-0.04	-0.07, -0.01	<b>0.006</b>	-0.05	-0.08, -0.01	<b>0.006</b>
GDP Per Cap.				-0.52	-0.84, -0.20	<b>0.001</b>	-0.34	-0.62, -0.06	<b>0.019</b>
Pop. Density				-0.06	-0.22, 0.09	0.424	0.02	-0.09, 0.14	0.718
Education				-0.04	-0.10, 0.01	0.143	-0.04	-0.09, 0.02	0.194
ICC	0.97			0.97			0.98		
N	78 Country			73 Country			22 Region 73 Country		
Observations	191			171			171		
Marginal R <sup>2</sup> / Conditional R <sup>2</sup>	0.232 / 0.977			0.370 / 0.983			0.146 / 0.980		

*Note.* Estimates are standardized regression coefficients. Marginal R<sup>2</sup> is based on fixed effects only; Conditional R<sup>2</sup> is based on both fixed and random effects.

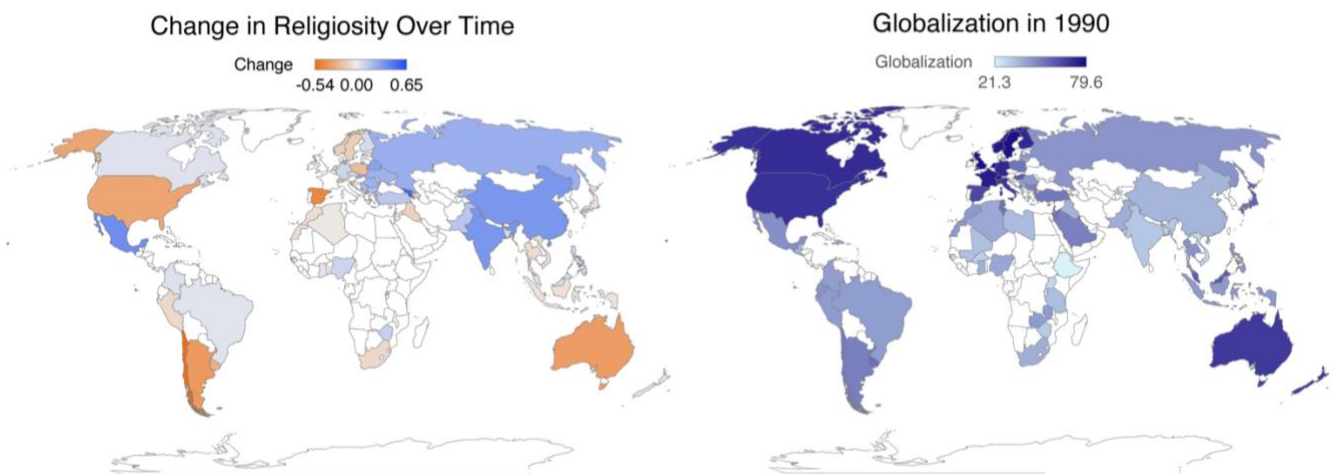
We next fit the same model including relevant control variables. Including these control variables reduced our sample size to 73 nations across waves two through six of the WVS due to inconsistent data availability across variables. The interaction between globalization and wave in

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predicting religiosity was robust to controlling for national GDP per capita, population density, and educational attainment (See Table 2, Model 2). Further, simple slopes replicate initial analyses, finding that nations with high levels of initial globalization became less religious over time,  $\beta = -.06, p = .007$ . There was no relationship between wave and religiosity for nations with low levels of initial globalization,  $\beta = .02, p = .29$ , or for nations with average levels of initial globalization,  $\beta = -.02, p = .25$ . As in Study 1, to control for geographical interdependencies, we next fit a model with countries nested within geographic regions. The interaction between globalization and wave remained significant (See Table 2, Model 3). Again, nations with high levels of initial globalization became less religious over time,  $\beta = -.06, p = .02$ , while nations with low ( $\beta = .03, p = .29$ ) and average ( $\beta = -.02, p = .40$ ) levels of globalization did not change significantly.

### Figure 2

*Change in Religiosity Over Time and Globalization Scores by Country*



*Note.* Left map depicts change in religiosity over time, with orange values depicting a decrease in religiosity and blue values depicting an increase in religiosity. Scores were calculated by

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subtracting earliest observed WVS religiosity scores from latest observed WVS religiosity scores for each country. Right map depicts 1990 globalization scores, with darker shading indicating higher globalization.

### **Discussion**

Our results suggest that nations that were more globalized in 1990 became less religious over the following two and a half decades that the World Values Survey spanned. While not causal evidence of a relationship between globalization and religiosity, these data do suggest that a nation's level of globalization can predict its religious trajectory in the years to come, and that high levels of globalization should be associated with a drop-off in religiosity over time. However, the nation level is likely not the only meaningful level of analysis for examining the relationship between globalization and religiosity. Therefore, we examined this relationship on a lower level in our next study.

### **Study 3**

Our third study tested whether the same negative relationship between globalization and religion that emerges across many countries also emerges within one country. A conservative test of this hypothesis would evaluate whether it replicates across multiple levels of analysis, so we therefore focused on county-level variation within the United States for this study. Because there is no county-level measure of globalization, we instead used the Social Connectedness Index (SCI)—which estimates the probability of social network connections between residents of US counties and residents in 185 countries around the world (Bailey et al., 2018)—as a within-USA proxy for globalization. Exposure to the social media of people in different countries can provide a close internet-based approximation of the social aspects globalization. Social media allows people to view picture-based and text-based updates about the daily lives, customs, and traditions

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of friends and acquaintances abroad, and allows for on-demand digital communication across national borders. The SCI can show us how likely people in a given American county are to have these global, digital connections with people around the world, providing a window into the amount of international exposure and communication that is present in each county.

### **Methods**

We compiled various sources of archival data to test whether individual-level religiosity is related to a county-level metric of social connectedness. After combining data from available sources and performing exclusions, our final dataset consisted of 309,595 individuals from 1128 different US counties.

### ***Measures***

*Religiosity.* We drew data on religiosity from openly available Project Implicit data from the Race IAT administered during 2020. The questionnaire that follows the IAT includes demographic questions, one of which asks, “How religious are you?” with response options from 1 (Not at all religious) to 4 (Strongly religious). We chose this source because the IAT’s high volume of participation yields data granular enough to provide geographic county-level information for each participant which we could match to our metric of social connectedness.

*Social Connectedness.* We used the Social Connectedness Index (Bailey et al., 2018) to approximate globalization. Data for this index is from August of 2020. There are no sources (to our knowledge) that calculate globalization at the county level based on economic, social, and political flows between countries like the KOF Globalization Index in Study 1 did. However, the SCI provides a metric of how socially connected each US county is with other countries around the world, making it an appropriate proxy for social globalization. Specifically, the SCI uses Facebook friendship data to determine the relative probability that a person in County X in the

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USA will be Facebook friends with someone living in Country Y. Due to this calculation, each county has a connectedness score with each of 185 other countries around the world. SCI scores can range from 1 to 1,000,000,000, with higher scores indicating more interconnectedness between a county and a country.

To calculate a single score for each county for the purposes of our analyses, we took the median SCI score for each county. We selected the median SCI score instead of the mean SCI score for each county to reduce undue influence that a single county-country pair may have on a county's mean SCI. For instance, a county may include a large immigrant population from one country and may therefore have a very high SCI with that country. But if that county does not have very strong connections to other countries, the one country with which it does have a strong connection would artificially inflate that county's average SCI score. This possibility is accounted for by using a median approach. Figure 3 depicts the median SCI scores for each county that we have data on.

*Covariates.* To adjust for well-established alternative control variables, we drew data on median household income, population density, and educational attainment. We drew median household income data from the Census Bureau's 2019 reporting – the most recent data available at the time of data collection. We drew population data for all counties from the Census Bureau's 2019 reporting, and land area (miles<sup>2</sup>) for each county from 2010 Census data (the most recent available). We calculated population density scores by dividing each county's population by its land area, and individual-level educational attainment was measured with an item included in Project Implicit's 2020 Race IAT's demographic section that asked each participant for their highest level of education, which we coded to range from 1 (Elementary school) to 9 (Advanced degree). The original scale had values ranging from 1 – 14, but we collapsed all degrees above a

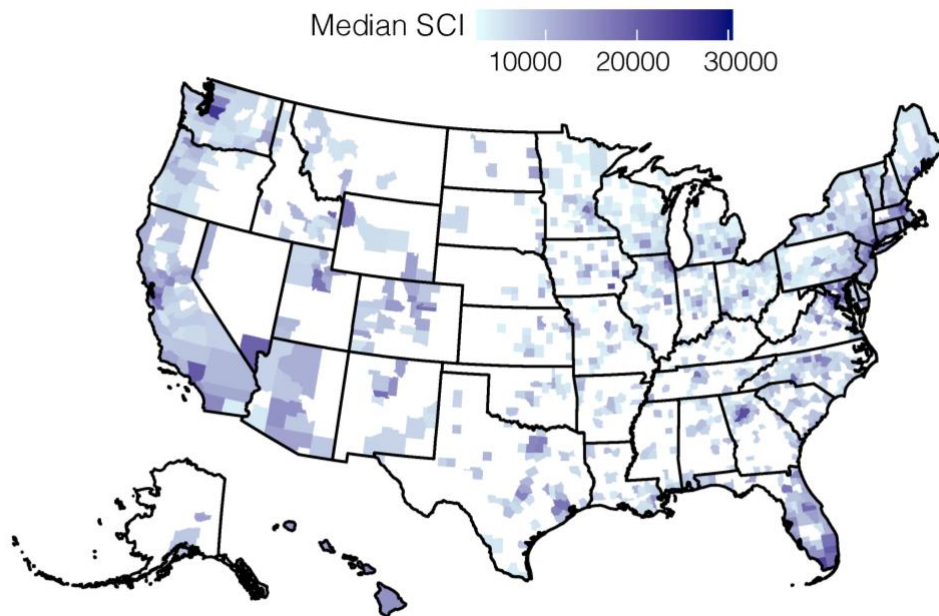
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value of 8 (MBA, JD, PhD, etc.) into a single “advanced degree” category as these higher scale points were more categorical than continuous in nature.

*Data Cleaning and Exclusions.* We removed 1771 counties prior to analyses that had fewer than 20 respondents to the religiosity measure to ensure that no county was reflective of a very small number of respondents. After this exclusion, because of the very large possible range in SCI scores (1 to 1,000,000,000), we checked for outliers prior to analysis to ensure that no one county had undue influence on the relationship between social connectedness and religiosity. We identified 5 counties that constituted outliers ( $\pm 1.5$  IQR) on the SCI metric and removed them from analyses. Combined, these exclusions reduced the number of counties from 2896 to the final 1128.<sup>1</sup>

### Figure 3

*Median SCI by County*



<sup>1</sup> Results replicate when all outliers and counties with <20 respondents are included in analysis,  $\beta = -.20, p < .001$ .



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*Note.* Shading represents median SCI score, with darker shading reflecting higher values.

Counties without shading are not represented in our data.

### Results

As in Study 1, we fit a random intercepts multilevel model with individual responses nested within counties. All variables were standardized prior to analysis. Results of this regression analysis showed a negative relationship between social connectedness and religiosity, such that individuals in more interconnected counties self-identified as less religious,  $\beta = -.10$ ,  $p < .001$  (Table 3, Model 1). See Figure 4 for a depiction of this relationship with individual religiosity responses aggregated to the county level.

To reflect our nation-level control variables from Studies 1 and 2, we controlled for county-level median household income, population density, and individual-level educational attainment. Including control variables reduced our sample size to 294,990 individuals within 787 counties due to inconsistent data availability across variables. The relationship between social connectedness and religiosity was robust to controlling for median household income, population density, and educational attainment,  $\beta = -.11$ ,  $p < .001$  (Table 3, Model 2).

**Table 3**

*Regression Results for Models Predicting Religiosity Across Counties*

<i>Predictors</i>	<b>Model 1</b>			<b>Model 2</b>		
	<i>Estimate</i>	<i>95% CI</i>	<i>p</i>	<i>Estimate</i>	<i>95% CI</i>	<i>p</i>
(Intercept)	0.03	0.01, 0.06	<b>0.012</b>	0.04	0.00, 0.08	<b>0.028</b>
Social Connectedness	-0.10	-0.12, -0.08	<b>&lt;0.001</b>	-0.11	-0.14, -0.08	<b>&lt;0.001</b>
Pop. Density				0.02	-0.02, 0.05	0.368
Median Household Income				-0.01	-0.08, 0.05	0.676
Education				-0.004	-0.01, -0.00	<b>0.019</b>
ICC	0.07			0.06		

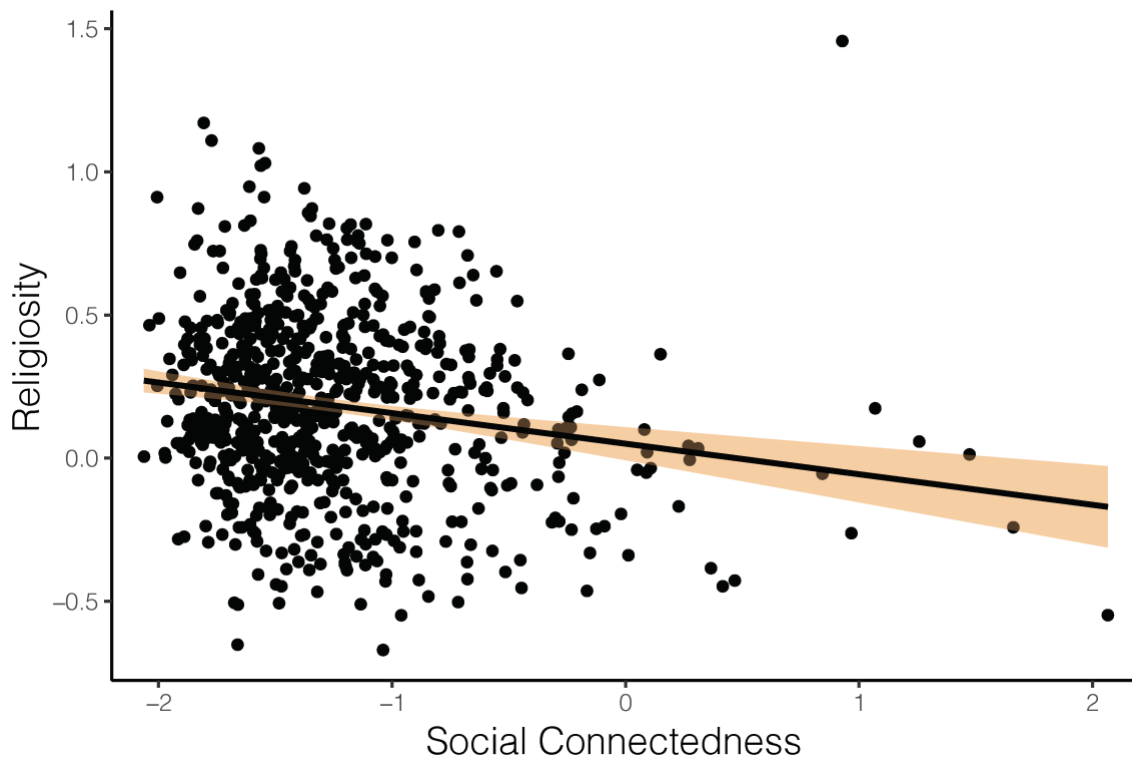
## GLOBALIZATION AND RELIGIOSITY

N	1128 County	787 County
Observations	309595	294990
Marginal R <sup>2</sup> / Conditional R <sup>2</sup>	0.010 / 0.076	0.012 / 0.068

*Note.* Estimates are standardized regression coefficients. Marginal R<sup>2</sup> is based on fixed effects only; Conditional R<sup>2</sup> is based on both fixed and random effects.

### Figure 4

*Relationship Between Social Connectedness and Religiosity Across 1128 US Counties*



*Note.* All variables were standardized, and religiosity scores were aggregated to the county level for plotting purposes.

### Discussion

These data suggest that higher social connectedness is related to reduced religiosity within the United States, replicating Study 1's international results. These studies support a

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negative relationship between globalization and religiosity that extends beyond the cross-national level of analysis.

### **Study 4**

Does globalization cause reduced religiosity? Thus far, our studies have relied on correlational data and on longitudinal data that suggests that globalized nations become less religious over time, but neither of these methods speak clearly and unambiguously to causality. Therefore, Study 4 directly tests for a causal relationship between globalization and religiosity using an experimental design. We also test religious acceptance as a potential mediator. Contact with diverse religions as a result of globalization may increase acceptance of other traditions, and this acceptance might in turn erode the conditions that are conducive to the formation and maintenance of religious beliefs. Thus, we predicted that globalization would increase religious acceptance, which would in turn decrease religiosity.

### **Methods**

#### ***Participants***

A power analysis for a linear model with two numerator degrees of freedom (assuming we will test a mediation) suggested that 482 participants would be needed to detect an expected small effect size of  $F = .02$  with adequate power ( $1 - \beta = .80$ ). We advertised on Amazon Mechanical Turk for a total of 700 participants<sup>2</sup>, and a total of 683 participants completed the full survey. Of these participants, 146 failed a manipulation check and were excluded from analyses. None of the participants who completed the full survey failed an attention check that asked them to respond “Strongly Agree” to a question embedded in one of the dependent variable scales. Excluding participants who did not complete the full survey and who failed the

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<sup>2</sup> An error in the preregistered power analysis suggested a larger sample size, explaining the over-recruitment above the 482 participants that the corrected power analysis suggests.

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manipulation check left a total sample size of 535 participants (267 male, 265 female, 1 other gender identity;  $M_{\text{age}} = 40.87$ ,  $SD_{\text{age}} = 12.77$ ). The majority of participants ( $n = 308$ ) identified as Christian, 7 identified as Buddhist, 8 as Jewish, 3 as Hindu, 8 as Muslim, 62 as agnostic, 74 as atheist, 14 as “none,” and 57 as “other” (some participants identified with multiple religions).

### *Manipulation*

Participants were randomly assigned to read one of two vignettes depicting the United States in the year 3000. In the globalization condition, the United States was described as having fluid borders with other nations, diverse residents who spoke languages other than English, and high levels of interaction with people and products from other cultures. In the control condition, the United States was described as being closed off from travel between and influence from other nations. The full vignettes used in this manipulation are available in the Supplemental Material (Table S1; see Jetten, Mols, & Postmes, 2015; Nettle & Saxe, 2020 for similar manipulation approaches).

### *Measures*

Because a trait like religiosity is probably unaffected by transient experimental manipulations like those administered in online surveys, we reasoned that a more appropriate and sensitive measure of religiosity given the structure of our manipulation would be the importance that participants, as members of this hypothetical future society, believe other members of this society would place on religion. Similar approaches have been used in previous research (Caluori et al., 2020), and other work shows that such indirect phrasing asking participants to estimate the beliefs of others can help avoid socially desirable and motivated responding (e.g. Fiske et al., 2002), which are especially problematic in questions of religiosity (Gervais & Najle, 2018).

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Thus, our religious importance items are phrased in terms of participants' perceptions of others in this future society, as are our religious acceptance items for consistency.

*Religious acceptance.* Religious acceptance, our proposed mediator, was measured with three items that asked “how accepting of multiple religions” people in this future society would be from 1 (Not at all accepting) to 6 (Extremely accepting), how much people in this future society would “think their own religion is the only acceptable one” from 1 (Not at all) to 6 (Entirely), and how much people in this future society would “think only their own religious belief is correct” from 1 (Not at all) to 6 (Entirely). The latter two of these items were reverse scored prior to analysis. These three items demonstrated high reliability ( $\alpha = .87$ ) and were averaged into a composite score of religious acceptance.

*Religious importance.* Our religious importance measure was comprised of three items: “In this future society, how important would religion be to people?”, “In this future society, how important would frequent prayer be to people?”, and “In this future society, how important would frequent religious service attendance be to people?” All items were measured on a scale from 1 (Not at all important) to 6 (Extremely important). These items showed high reliability ( $\alpha = .93$ ) and were averaged into a composite score of religious importance.

*Exploratory measures.* For exploratory purposes, we included a secondary measure of religiosity: a shortened version of the Supernatural Belief Scale (Jong et al., 2013) adapted to the context of the future society participants read about. Participants were prompted to indicate how much they believed a typical member of the future society they read about would agree with statements such as “There exists an all-knowing, all-loving, all-powerful God” and “Every human being has a spirit or soul that is distinct from the physical body” (see Supplemental

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Materials for full scale, Table S2). These items were measured on a scale from 1 (Strongly disagree) to 9 (Strongly agree) and were averaged into a composite SBS score ( $\alpha = .95$ ).

We also asked participants what percentage of people in this future society they thought would be atheists. Participants completed this measure with a slider from 1-100. The combination of the religious importance measure, the SBS, and this atheism percentage measure allow us to test multiple perspectives on religiosity, including importance of religion and religious behavior, support for traditional religious beliefs, and the overall religious makeup of society. This multifaceted approach allows us to rule out the possibility that only one definition of religiosity would be affected by our manipulation.

*Covariates.* To investigate whether our results were robust to variables that may relate to perceived religiosity in this future society, participants completed a measure of their own religiosity ranging from 1 (Not at all religious) to 7 (very religious), a measure of subjective SES where participants could position themselves anywhere from 1 (the bottom rung) to 10 (the top rung) on a socioeconomic ladder, and a measure of educational attainment ranging from 1 (Less than a high school degree) to 7 (Doctorate level degree such as PhD or MD). These measures were presented in the demographics section at the end of the survey.

### ***Procedure***

Each participant was randomly assigned to either the globalization or control condition. After reading the assigned vignette about a future society, participants rated how accepting of other religions they believed people in this future society would be. Next, they completed the measure of religious importance followed by the SBS and the atheist percentage item. Participants then answered multiple exploratory questions which are not germane to the current work, so we do not report on them here. Next, they completed a manipulation check asking

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participants to respond “true” or “false” to a statement reading “It is common to hear languages other than English being spoken in the future society I read about.” Finally, participants completed a demographics questionnaire and were then debriefed.

### Results

**Effect of globalization on religious acceptance and importance.** We hypothesized that participants in the globalization (vs. control) condition would anticipate that residents of this future society were more accepting of different religions. We also tested whether condition affected participants’ estimations of how important religion would be in this future society. To test the effect of condition on religious acceptance and religious importance, we regressed both dependent variables onto condition. As anticipated, participants in the globalization condition anticipated higher levels of religious acceptance in the future society they read about than participants in the control condition (see Table 1, Model 1). Participants in the globalization condition also anticipated lower levels of religious importance in this future society than participants in the control condition (Table 1, Model 3). Both effects were robust to controlling for participants’ religiosity, subjective SES, and educational attainment (Table 1, Model 2 and Model 4). Figure 5 depicts means and 95% CIs across conditions.

**Table 4**

*Regression Results Predicting Religious Acceptance and Religious Importance, Study 4*

Dependent Variable and Predictors	<i>df</i>	<i>b</i> (SE)	$\beta$	<i>t</i>	<i>p</i>
<b>Model 1: Religious Acceptance</b>	533				
Condition		2.43(.09)	.76	27.33	<.001
<b>Model 2: Religious Acceptance</b>	519				
Condition		2.53(.09)	.80	29.09	<.001
Religiosity		-.07(.02)	-.10	-3.42	<.001
Subjective SES		-.11(.03)	-.14	-4.24	<.001
Educational Attainment		.004(.04)	.004	.12	.90
<b>Model 3: Religious Importance</b>	533				

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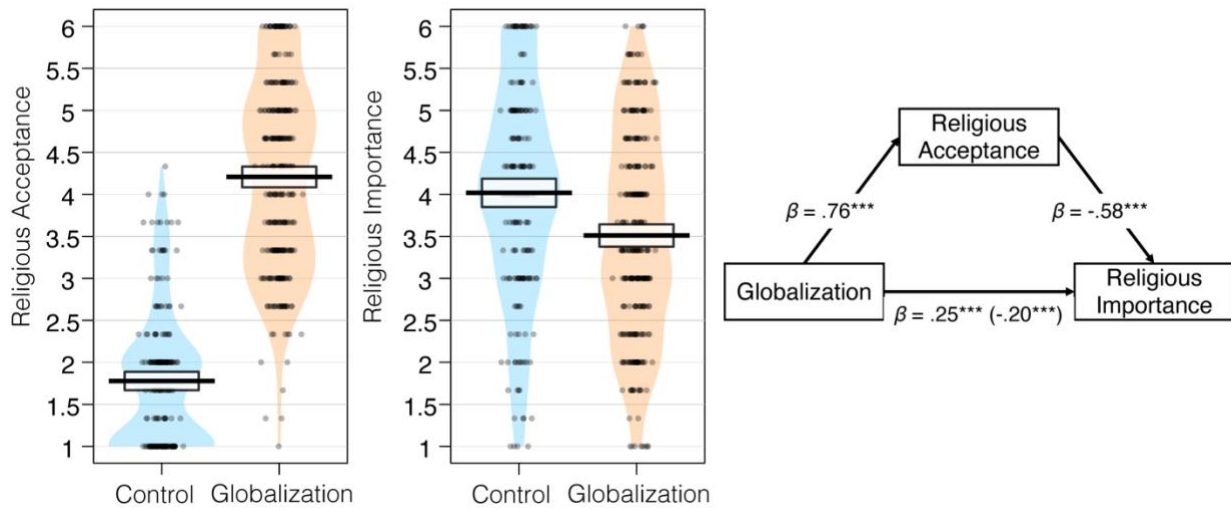
Condition		-.51(.11)	-.20	-4.68	<.001
<b>Model 4: Religious Importance</b>	529				
Condition		-.65(.10)	-.26	-6.29	<.001
Religiosity		.12(.02)	.21	5.01	<.001
Subjective SES		.13(.03)	.21	4.45	<.001
Educational Attainment		.001(.04)	.001	.02	.99

*Note.* Bold indicates dependent variable and indented variables are predictors. Condition is coded such that 0 = control, 1 = globalization.

**Mediation.** We next tested our prediction that religious acceptance would mediate the relationship between globalization and religious importance (see Figure 5). A 5,000 sample bootstrapped estimation of the indirect effect of globalization on religious importance through religious acceptance was consistent with significant mediation,  $b = -1.14$ ,  $SE = .13$ , 95% CI [-1.39, -.88]. This indirect effect held when controlling for religiosity, subjective SES, and educational attainment,  $b = .51$ ,  $SE = .14$ , 95% CI [-1.42, -.88]. A potential suppression effect was detected such that the relationship between globalization and religious importance became positive when controlling for religious acceptance, suggesting that in the absence of religious acceptance, globalization may lead to increased religiosity. However, this is a speculative explanation, and would require further empirical investigation to support.



**Figure 5**



*Note.* Left: Religious acceptance and religious importance across conditions. Black bar represents mean, white band represents 95% CI, and width of plot represents density. Dots are individual data points. Right: Mediation model displaying the relationship between condition and religious importance through religious acceptance. Regression coefficients represent standardized estimates. Total effect is in parentheses.

**Exploratory Analyses.** To investigate our exploratory measures, we regressed participant responses to the SBS and estimates of the percentage of the population that would be atheist in the future society on condition. Participants anticipated lower levels of religiosity as measured by the SBS in the globalization condition than the control condition,  $b = -.44$ ,  $SE = .17$ ,  $\beta = -.11$ ,  $t(533) = -2.53$ ,  $p = .01$ . They also expected a larger percentage of the population to be atheist in the globalization condition than in the control condition,  $b = 17.70$ ,  $SE = 2.27$ ,  $\beta = -.001$ ,  $t(533) = 7.81$ ,  $p < .001$ . Data was consistent with mediation of the relationship between globalization and the SBS by religious acceptance, indirect effect  $b = -1.30$ ,  $SE = .21$ , 95% CI [-1.72, -.89]. However, there was no evidence that religious acceptance mediated the relationship

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between globalization and participants' atheist estimates, indirect effect  $b = -3.00$ ,  $SE = 2.81$ , 95% CI [-8.69, 2.48].

### **Discussion**

This experiment provides initial evidence that changes in the salience of globalization affect religiosity, at least in the contexts of participant forecasts. When globalization is made salient, people assume that others will find religion less important and will be less likely to engage in traditional religious beliefs and practices. Further, this can be partially explained by the extent to which people assume others will be accepting of multiple religions. These data support the assumption that when multiple religions are accepted, the path toward adhering to any one religion becomes less clear. However, a limitation to this study is that it asks participants to intuit what *others* may think in this future society. In our next experiment, we attempted to make our dependent measures more directly relevant to participants themselves.

### **Study 5**

Study 5 aimed to replicate and extend the findings from Study 4 by asking participants to focus on expectations about themselves instead of others. Although socially desirable responding may limit people from saying they would be less religious in a future society, we wanted to test whether any of the effects from our other-focused experiment would replicate when the self is the object of focus. Participants were once again asked to imagine themselves as members of the future society they read about but, new to this study, were asked to predict their own religiosity and religious acceptance in this future society instead of the religiosity of others. This approach allows us to go beyond testing people's intuitions about what types of beliefs may be more common in a globalized vs. isolated society and to test how the salience of globalization affects one's *own* religious reasoning. We predicted that globalization would increase participants'

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anticipated acceptance of other religions, which would in turn predict lower anticipated religious importance.

### **Methods**

#### ***Participants***

A power analysis for a linear model with two numerator degrees of freedom (assuming we will test a mediation) suggested that 482 participants would be needed to detect an expected small effect size of  $F = .02$  with adequate power ( $1 - \beta = .80$ ). We only recruited religious participants for this study because we were interested in how globalization might affect one's *own* religiosity, and these questions would be difficult for non-religious participants to answer. We therefore included a screener question asking “Do you believe in a god or a higher spiritual being?” at the beginning of our survey, and only participants who responded “yes” to this question were invited to complete the full survey. We advertised on Amazon Mechanical Turk for a total of 650 participants, and a total of 652 participants completed the full survey. Of these participants, 103 failed a manipulation check and were excluded from analyses. Twenty-seven of the participants who completed the full survey failed an attention check that asked them to respond “Strongly Agree” to a question embedded in one of the dependent variable scales. Further, although all participants who completed the survey indicated belief in god or a higher spiritual being, two participants later identified as atheists, and were therefore excluded. Excluding participants who did not complete the full survey, who failed the manipulation check, who failed the attention check, and who were atheist left a total sample size of 530 participants (243 male, 285 female, 1 other gender identity;  $M_{\text{age}} = 38.67$ ,  $SD_{\text{age}} = 13.01$ ). The majority of participants ( $n = 418$ ) identified as Christian; 11 identified as Buddhist, 13 as Jewish, 6 as Hindu,

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9 as Muslim, 32 as agnostic, 34 as “none,” and 16 as “other” (some participants identified with multiple religions).

### *Manipulation*

Participants were randomly assigned to read one of the two vignettes described in Study 4.

### *Measures*

*Religious acceptance.* Religious acceptance was measured with the same items and on the same scale as in Study 4, but reworded to ask about participants’ own anticipated acceptance of other religions (e.g. “In this future society, how much would you think only your own religious belief is correct?”). These three items demonstrated high reliability ( $\alpha = .82$ ) and were averaged into a composite score of religious acceptance.

*Religious importance.* We modified the same three religious importance measure used in Study 4 to ask about participants’ own anticipated religiosity in this future society (e.g. “In this future society, how important would religion be to you?”). All items were measured on a scale from 1 (Not at all important) to 6 (Extremely important). These items showed high reliability ( $\alpha = .90$ ) and were averaged into a composite score of religious importance.

*Exploratory measures.* As in Study 4, we included the same modified version of the SBS for exploratory purposes. We reworded the prompt so that participants indicated how much they believed they themselves would agree with the scale’s statements about religious beliefs in the future society they read about. These items were measured on a scale from 1 (Strongly disagree) to 9 (Strongly agree), and were averaged into a composite SBS score ( $\alpha = .90$ ).

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We used the same exact atheist percentage measure as Study 4 to ask participants what percentage of people in this future society they thought would be atheists. Participants completed this measure with a slider from 1-100.

*Covariates.* Participants completed the same measures of religiosity, subjective SES, and educational attainment as in Study 4.

### ***Procedure***

Each participant was randomly assigned to read either the globalization or control condition vignette. They then completed the anticipated religious acceptance measure. Next, they completed the measure of religious importance followed by the SBS and the atheist percentage item. Participants next answered multiple exploratory questions (which we do not discuss here as they are not related to this work), and then completed the same manipulation check as in Study 4. Finally, participants completed a demographics questionnaire and were then debriefed.

### **Results**

**Effect of globalization on religious acceptance and importance.** We hypothesized that participants would anticipate that they would be more religiously accepting in the globalization condition than the control condition. We also tested whether condition affected participants' estimations of how important religion would be to them in this future society. To test the effect of condition on religious acceptance and religious importance, we regressed both dependent variables onto condition. As anticipated, participants in the globalization condition anticipated that they would be more accepting of other religions than participants in the control condition (Table 2, Model 1), and this effect held controlling for religiosity, subjective SES, and educational attainment (Table 2, Model 2). There was no effect of condition on participants'

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estimations of how important religion would be to them in this future society (Table 2, Model 3).

Means and 95% CIs across conditions are depicted in Figure 6.

**Table 5**

*Regression Results Predicting Religious Acceptance and Religious Importance, Study 5*

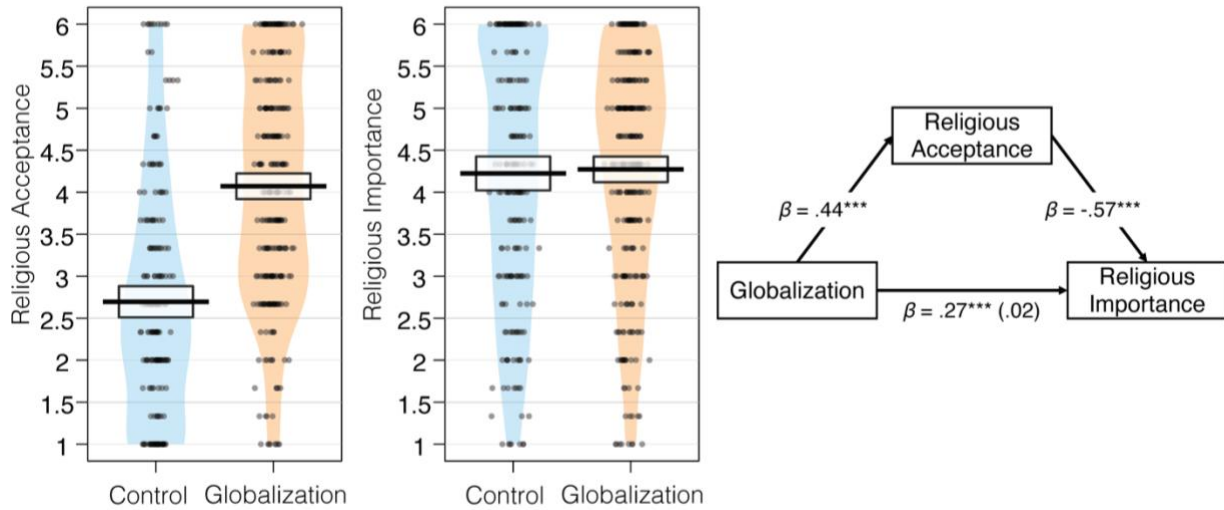
Dependent Variable and Predictors	<i>df</i>	<i>b</i> ( <i>SE</i> )	$\beta$	<i>t</i>	<i>p</i>
<b>Model 1: Religious Acceptance</b>	528				
Condition		1.28(.12)	.44	11.31	<.001
<b>Model 2: Religious Acceptance</b>	524				
Condition		1.49(.11)	.48	13.55	<.001
Religiosity		-.35(.03)	-.40	-11.23	<.001
Subjective SES		-.06(.03)	-.07	-1.90	.06
Educational Attainment		-.01(.05)	-.01	-.31	.76
<b>Model 3: Religious Importance</b>	528				
Condition		.05(.13)	.02	.39	.70

*Note.* Bold indicates dependent variable and indented variables are predictors. Condition is coded

such that 0 = control, 1 = globalization.

**Mediation.** As predicted, the data supported a significant indirect effect of globalization on participants' religious importance through religious acceptance (See Figure 6). A 5,000-sample bootstrapped estimation of this indirect effect was consistent with significant mediation,  $b = -.73$ ,  $SE = .09$ , 95% CI [-.92, -.55]. This indirect effect was robust to controlling for religiosity, subjective SES, and educational attainment,  $b = -.40$ ,  $SE = .80$ , 95% CI [-.56, -.25]. As in Study 4, we observed a suppression effect, and the relationship between globalization becomes positive and significant when controlling for religious acceptance, again suggesting that globalization may cause increased religiosity in the absence of religious acceptance.

**Figure 6**



*Note.* Left: Religious acceptance and religious importance across conditions. Black bar represents mean, white band represents 95% CI, and width of plot represents density. Dots are individual data points. Right: Mediation model displaying the relationship between condition and religious importance through religious acceptance. Regression coefficients represent standardized estimates. Total effect is in parentheses.

**Exploratory Analyses.** We tested the effect of condition on our exploratory measures with a series of regressions. As with our religious importance measure, there was no effect of globalization condition on participants’ anticipated religious beliefs as measured by the SBS,  $b = -.004$ ,  $SE = .14$ ,  $\beta = -.001$ ,  $t(528) = -.03$ ,  $p = .98$ . Being in the globalization condition did, however, predict higher participant estimates of the percentage of the population that would be atheist,  $b = 8.70$ ,  $SE = 2.29$ ,  $\beta = .16$ ,  $t(528) = 3.81$ ,  $p < .001$ . This finding replicates our finding from Study 5 that condition affects assumptions about the percentage of the future society population that would be atheist. Data was consistent with mediation of the relationship between globalization and the SBS by religious acceptance, indirect effect  $b = -.34$ ,  $SE = .08$ , 95% CI [-

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.50, -.19]. However, as in Study 4, there was no evidence that religious acceptance mediated the relationship between globalization and participants' estimate of the percentage of the population that would be atheist, indirect effect  $b = -1.89$ ,  $SE = 1.14$ , 95% CI [-4.23, .26].

### **Discussion**

Overall, participants anticipated that they would be more religiously accepting – though perhaps no less personally religious – in a globalized future society. While people do not intuit that their own religiosity will change based on their exposure to information about globalization, this experiment does provide support for our hypothesized indirect pathway from globalization to reduced religiosity by way of increased religious acceptance. When globalization is made salient, people anticipate that they would be more accepting of multiple religions. This increased religious acceptance, in turn, predicts reduced religious importance among participants, complementing our findings from Study 4.

### **Study 6**

Our previous experiments manipulated globalization in order to measure its effect on religious acceptance and religiosity. Studies 4 and 5 find statistical support for a mediating role of religious acceptance in the relationship between globalization and religiosity. However, because our data in these experiments is cross-sectional, these studies are unable to provide direct support for a causal pathway from globalization to religious acceptance to reduced religiosity. Additionally, because these studies do not manipulate religious acceptance, we cannot conclude that increases in religious acceptance directly cause decreases in religiosity. Therefore, our sixth study manipulated our theorized mediator—religious acceptance—to test whether it directly affects religious importance.



### **Methods**

#### ***Participants***

A power analysis for an independent samples t-test recommends a sample size of  $N = 504$  to detect an effect size of  $d = .25$  with an alpha level of  $.05$  and a power level of  $1 - \beta = .80$ . We advertised on Prolific Academic for a total of 600 participants to account for check failure, and a total of 602 participants completed the full survey. Of these participants, 34 failed a manipulation check and were excluded from analyses. Fourteen of the participants who completed the full survey failed an attention check that asked them to respond “Strongly Agree” to a question embedded in one of the dependent variable scales. Excluding participants who did not complete the full survey and who failed the manipulation check left a total sample size of 559 participants (224 male, 317 female, 17 other gender identity;  $M_{\text{age}} = 30.92$ ,  $SD_{\text{age}} = 13.20$ ). The majority of participants ( $n = 212$ ) identified as Christian; 11 identified as Buddhist, 15 as Jewish, 10 as Hindu, 12 as Muslim, 1 as Sikh, 117 as agnostic, 105 as atheist, 29 as “none,” and 73 as “other” (some participants identified with multiple religions).

#### ***Manipulation***

As in Studies 4 and 5, participants were randomly assigned to read one of two vignettes depicting the United States in the year 3000. However, these vignettes described the society’s acceptance of other religions instead of their respective levels of globalization. In the religious acceptance condition, participants read about a society where people from different religious backgrounds are accepting of other traditions and think that multiple religions can be correct at the same time. Our other condition described a society where people from different religious backgrounds are not accepting of other traditions and think that only one religious belief can be

correct. We termed this condition the “religious exclusivism” condition. The full vignettes used in this manipulation can be found in the Supplemental Material (Table S3).

### *Measures*

*Religious importance.* We returned to asking participants to anticipate how religious they believe other members of this future society will be in the present study. We used the same three-item religious importance measure as in Study 4 to ask participants how important they believed religion would be to others in the future society they read about. All items were measured on a scale from 1 (Not at all important) to 6 (Extremely important). These items showed high reliability ( $\alpha = .92$ ) and were averaged into a composite score of religious importance.

*Exploratory measures.* As in Studies 4 and 5, we included the same modified version of the SBS for exploratory purposes. We used wording from Study 4 so that participants indicated how much they believed others in the future society they read about would agree with the scale’s statements about religious beliefs. These items were measured on a scale from 1 (Strongly disagree) to 9 (Strongly agree), and were averaged into a composite SBS score ( $\alpha = .91$ ).

We used the same exact atheist percentage measure as Studies 4 and 5 to ask participants what percentage of people in this future society they thought would be atheists. Participants completed this measure with a slider from 1-100.

New to this study, we added an exploratory item meant to assess participants’ own anticipated comfort disclosing religious doubt in this future society. We reasoned that such an item may be less subject to socially desirable responding than more direct items asking participants how important religion would be to them. Specifically, we asked participants how comfortable they would be expressing doubts about religion if they were experiencing them in this future society, on a scale from 1 (Not at all comfortable) to 6 (Entirely comfortable).

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*Covariates.* Participants completed the same measures of religiosity, subjective SES, and educational attainment as in Studies 4 and 5.

### ***Procedure***

Each participant was randomly assigned to read either the religious acceptance or religious exclusivism vignette. They then completed the anticipated religious acceptance measure. Next, they completed the measure of religious importance followed by the SBS, the atheist percentage item, and the question about expressing religious doubts. Participants next answered multiple exploratory questions (which we do not discuss here as they are not related to this work), and then completed a manipulation check asking participants to respond “true” or “false” to the question “The future society I read about believes that multiple religions can be correct at the same time.” Finally, participants completed a demographics questionnaire and were then debriefed.

### **Results**

**Effect of globalization on religious importance.** We hypothesized that participants in the religious acceptance (vs. religious exclusivism) condition would anticipate that residents of this future society would think religion was less important. To test this hypothesis, we regressed religious importance onto condition. See Table 3, Model 1 for full results. As anticipated, participants in the religious acceptance condition anticipated higher levels of religious importance in the future society they read about than participants in the religious exclusivism condition (means and 95% CIs across conditions are depicted in Figure 7). This effect was robust to controlling for participants’ religiosity, subjective SES, and educational attainment (Table 3, Model 2).

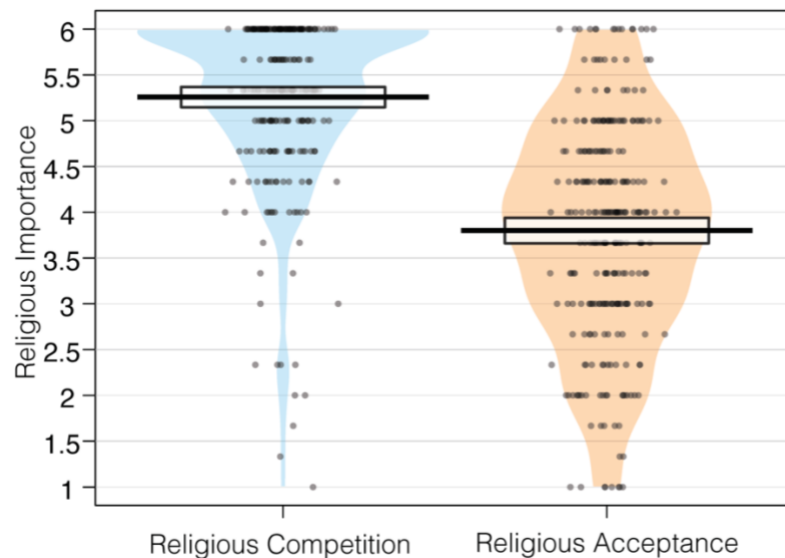
**Table 6**

*Regression Results Predicting Religious Importance, Study 6*

Dependent Variable and Predictors	<i>df</i>	<i>b</i> (SE)	$\beta$	<i>t</i>	<i>p</i>
<b>Model 1: Religious Importance</b>	557				
Condition		-1.46(.09)	-.56	-15.96	<.001
<b>Model 2: Religious Importance</b>	553				
Condition		-1.47(.09)	-.56	-16.20	<.001
Religiosity		.08(.02)	.12	3.35	<.001
Subjective SES		-.01(.03)	-.01	-.31	.76
Educational Attainment		-.08(.03)	-.09	-2.51	.01

*Note.* Bold indicates dependent variable and indented variables are predictors. Condition is coded such that 0 = religious exclusivism, 1 = religious acceptance.

**Figure 7**



*Note.* Religious importance across conditions. Black bar represents mean, white band represents 95% CI, and width of plot represents density. Dots are individual data points.

**Exploratory Analyses.** Next, we tested the effect of condition on our exploratory measures with a series of regressions. As with our religious importance measure, participants in the religious acceptance condition expected lower levels of religious beliefs as measured by the

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SBS than people in the religious exclusivism condition,  $b = -1.05$ ,  $SE = .14$ ,  $\beta = -.30$ ,  $t(557) = -7.53$ ,  $p < .001$ . Further, participants in the religious acceptance condition (vs. exclusivism condition) expected a higher percentage of the future society to be atheist,  $b = 12.31$ ,  $SE = 1.87$ ,  $\beta = .27$ ,  $t(557) = 6.58$ ,  $p < .001$ . Finally, we tested whether condition affected participants' self-reported willingness to disclose religious doubts in the future society they read about. In line with our other results, participants were more likely to say that they would feel comfortable disclosing doubts about religion if they were having them in the religious acceptance condition than in the religious exclusivism condition,  $b = 2.90$ ,  $SE = .12$ ,  $\beta = .71$ ,  $t(557) = 23.81$ ,  $p < .001$ .

### **Discussion**

The results of this study suggest that higher levels of religious acceptance do indeed lead to lower levels of anticipated religiosity. This lends support to the hypothesized causal pathway from globalization to religious acceptance to reduced religiosity by demonstrating a causal effect of acceptance on religion. Further, exploratory analyses revealed that participants themselves would be more willing to disclose religious doubts (if they were having any) in a religiously accepting as opposed to religiously competitive society.

### **General Discussion**

Across six studies, we find support for a relationship between globalization and reduced religiosity. International data suggests that people living in more globalized countries tend to be less religious, and that the national levels of globalization can predict trajectories of religiosity in coming years. This relationship not only exists between countries, but also emerges between counties within the United States, with people reporting lower levels of religiosity in counties that are more virtually interconnected with other nations abroad. Turning from the external validity of archival studies to the internal validity afforded by experimental manipulations, our

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last three experiments find that manipulating the salience of globalization decreases the estimated religiosity of a society, and that this effect is mediated by greater anticipated religious acceptance under conditions of globalization. Further, a manipulation of religious acceptance decreases anticipated religiosity.

Together, these results suggest that globalization decreases religiosity, and that this effect can partly be explained by the increased religious acceptance that accompanies globalization. Our data suggest that as people in more globalized societies come into contact with diverse religions, they become more accepting of these other religions, adopting the belief that multiple religions can be correct simultaneously. This religious acceptance, in turn, predicts reduced religiosity. Likely, in more religiously accepting societies, individuals witness displays of commitment to a broader range of religions than they would witness in less accepting societies. This could dilute the cues gleaned from social learning mechanisms and motivational processes that help reinforce belief in a particular religion.

### **Theoretical Implications**

The current work extends beyond previous research by investigating the impact of globalization on religious belief. Previous theories attempting to understand the global trend of secularization focus on how individual psychological motivations in favor of religious belief may be reduced by things like societal security systems (Norris & Inglehart, 2004) or strong external sources of regulation (Kay et al., 2008; 2009). Extending beyond this previous work, our studies additionally allow for the possibility that religious norms and influence religious belief. Specifically, religious acceptance—which we find is increased by globalization—may have downstream consequences for the ways that religion is practiced and celebrated in public life, and these norms should themselves influence how people’s religious beliefs form. This

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contributes the crucial perspective of social and cultural transmission of belief to discussions of secularization.

This work also has implications for existing approaches to studying religion. Our findings lend support to theories of culturally evolved religion, which assume a critical role of cultural and socioecological factors in the acquisition of religious beliefs. Research in this area builds on the basic assumption that cultural information is transmitted (Boyd & Richerson, 1982; Richerson & Boyd, 2005), arguing that individuals' belief (or lack thereof) in God is informed by others around them (Gervais et al., 2021; Harris & Koenig, 2006; Willard & Cingl, 2017). Our finding that globalization—a macro-level cultural factor—influences micro-level cognition and religiosity supports the important role of culture in the shaping of religious beliefs.

### **Open Questions**

One question that this work does not directly speak to is the exact process by which religious acceptance decreases religiosity. We believe that previous work on the social learning mechanisms that scaffold religious belief provide a potential answer to this question, and this is the explanation that we focus on throughout our paper. Namely, we expect that religious acceptance dilutes the consistent signaling in favor of one religion that is critical for enforcing religious belief (Gervais et al, 2021; Lanman & Buhrmester, 2017). However, it is worth considering alternate or complementary explanations for this relationship.

One such explanation could come from literature on motivation. Historically, many religions have garnered support through religious exclusivism, which is the idea that only one religion can be correct (Merino, 2010; Moser, 2011). Religious acceptance, as defined in this paper, allows for the possibility that multiple religions may be correct, or at least coexistent. While this ecumenicism likely spells good news for relations between different religious groups

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(Merino, 2010; Sherkat, 2004), it may spell bad news for actual religious belief. Traditions like Christianity, Hinduism, Judaism, and Buddhism may have different beliefs and teachings, but have a similar end-goal of ultimate truth and salvation. If each of these paths is seen as potentially holding truth—as religious acceptance would imply—then the uniqueness of any one religion as a path to this desired end-goal is diluted. Research on the dilution effect shows that multiple paths for reaching a common end-goal make each potential path toward this goal seem less individually meaningful and instrumental (Kruglanski et al., 2015; Schumpe et al., 2018; Zhang et al., 2007), and intrinsic motivation toward that end-goal is decreased (Bélanger et al., 2015). This suggests that as people become more accepting of other religions, their own belief may falter as any one religion seems less individually meaningful. When more religions are acceptable, each individual religion may become less convincing. Thus, it is possible that motivational processes could be at play in reducing religiosity following increases in religious acceptance. We do not think that these processes are mutually exclusive with other explanations—like those focused on throughout this paper highlighting the dilution of cues in favor of a particular religion—for the negative relationship between religious acceptance and religiosity. This is an open question for future research.

This work also raises questions about the nature of increases in numbers of nonreligious individuals. One explanation for this upward trend in nonreligion is obvious: that the number of people who are not religious is on the rise, and surveys such as the World Values Survey are capturing this trend. But self-report measures of religiosity can be upwardly skewed by socially desirable responding (Gervais & Najle, 2018), at least in American samples. This suggests that nonreligion may be underreported in some nations. Further, work shows that nonreligion is higher in nations that view religion as less necessary for morality (Abrams, 2021). Together,



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these findings suggest that another factor behind rising numbers of nonreligious individuals could be increasing comfort with reporting nonreligious identity as the stigma related to nonbelief decreases. It is possible that nonreligion is increasing because people simply feel more comfortable reporting that they are not religious as societies see secular and moral lifestyles as less at odds with each other. Indeed, in Study 6, we find that people would be more willing to express religious doubts in more religiously accepting future societies. This suggests that national metrics of nonreligion could at least in part be driven by increased perceptions of religious acceptance and decreased fear of stigmatization of nonbelievers, leading to higher self-report of nonbelief. Current methods for assessing the rate of nonreligion across countries make it impossible to parse the underlying reasons for upward trends in nonreligion. However, this is a fruitful and important area for future work.

### **Limitations and Future Directions**

One limitation of the current research stems from the difficulty of manipulating cultural-level variables in experiments with individuals. Of necessity, our manipulations of globalization and of religious acceptance asked people to imagine themselves in a particular cultural context instead of experimentally placing them in that cultural context. This approach is not entirely uncommon in social psychology, and previous research has had success manipulating the salience of various cultural qualities such as inequality, social heterogeneity, the presence or absence of war, and cultural tightness through similar types of manipulations (e.g. Caluori et al., 2020; Jackson et al., 2021; Jetten, Mols, & Postmes, 2015; Nettle & Saxe, 2020; Sánchez-Rodríguez et al., 2019; Sprong et al., 2019). Still, our approach has limitations, and people's responses in these imagined scenarios may not perfectly reflect their responses in real-world situations.

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Additionally, while our studies find a general trend of globalization leading to increased religious acceptance and reduced religiosity, there may be specific circumstances in which globalization could lead to animosity between religious groups (Caluori et al., 2020, Chiu & Cheng, 2007; Torelli et al., 2011). For instance, if a nation's government imposes strong religious restrictions or if there is a strong norm in a nation to follow a particular religion, an influx of globalization may seem like more of a symbolic threat than it would in places with weaker religious norms and restrictions and may therefore spur conflict and prejudice (González et al., 2010; Verkuyten, 2009; Stephan & Stephan, 2000). Future work could examine the conditions under which these different effects of globalization may emerge.

Finally, while this work does not make predictions about the future of religiosity based on patterns of globalization, there are interesting questions within this realm that merit further study. One such question is whether the turn towards nonreligion will continue as a function of globalization as globalization continues to increase and spread throughout the world. If this relationship were completely linear, then nations would in theory become completely secular as they became more and more globalized. However, another possibility is that there could be a threshold at which the effect of globalization on religion may plateau. Future research could investigate whether such a tipping point exists and the effects of globalization on religiosity once this tipping point is reached.

It is also worth considering other effects that globalization could have on religious belief. Globalization may not only affect the strength of belief, as is demonstrated in this paper, but it may also affect the *content* of religious belief. A large and growing body of work shows that socioecological factors like threat from natural hazards, warfare, and societal challenges can predict the specific types of religious beliefs that people hold (Botero et al., 2014; Caluori et al.,

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2020; Johnson, 2005; Purzycki, 2016; Skoggard et al., 2020). Globalization could be yet another socioecological factor shaping the content of people's belief systems. For instance, more globalized areas could see higher levels of religious syncretism, or the borrowing and mixing of beliefs and practices across different religious traditions. As the importance of religion in people's lives fluctuates and religious norms shift, it is increasingly important to understand the forms that belief may take and the factors shaping those beliefs.

### **Conclusion**

Religion affects the daily lives of people all around the world. Participation in religious communities can influence decisions from how to spend a Sunday morning to which charity to donate to to opinions on social issues as important as gay marriage and abortion rights. The recent trend away from religion and towards non-affiliation marks a fundamental shift in how humans form communities and relate to the world around them. The implications of this shift are huge and have already begun playing out in the form of new and non-traditional religious movements (Houtman & Aupers, 2007; Pew, 2017) and prejudice against the non-religious (Gervais et al., 2017; Simpson & Rios, 2017). As globalization continues to reshape human connections across borders and boundaries, this research can help us explain why some nations have remained religious while others have shifted away from their religious roots.

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