

# Conflict Changes How People View God



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## Abstract

Religion shapes the nature of intergroup conflict, but conflict may also shape religion. Here, we report four multimethod studies that reveal the impact of conflict on religious belief: The threat of warfare and intergroup tensions increase the psychological need for order and obedience to rules, which leads people to view God as more punitive. Studies 1 ( $N = 372$ ) and 2 ( $N = 911$ ) showed that people's concern about conflict correlates with belief in a punitive God. Study 3 ( $N = 1,065$ ) found that experimentally increasing the salience of conflict increases people's perceptions of the importance of a punitive God, and this effect is mediated by people's support for a tightly regulated society. Study 4 showed that the severity of warfare predicted and preceded worldwide fluctuations in punitive-God belief between 1800 CE and 2000 CE. Our findings illustrate how conflict can change the nature of religious belief and add to a growing literature showing how cultural ecologies shape psychology.

## Keywords

religion, belief, conflict, cultural evolution, cross-cultural, open data, preregistered

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Religion and intergroup conflict have been inextricably linked throughout human history. From the Jewish–Roman wars of antiquity, to the Crusades of the Middle Ages, to ongoing intergroup tensions in Myanmar, Israel, and Palestine, religious belief and conflict have long gone hand in hand. However, the empirical study of religion's relationship with conflict is surprisingly young and remarkably one-sided. Scholars often write about how religion can promote or prevent conflict (Benda & Toombs, 2000; Bushman, Ridge, Das, Key, & Busath, 2007; Ginges, Hansen, & Norenzayan, 2009; Harris, 2005), but far fewer discuss conflict's effect on religion. A recent set of studies found that warfare increased people's religious participation (Henrich, Bauer, Cassar, Chytilová, & Purzycki, 2019), but little is known about how conflict might change the nature and content of religious belief. We integrate theories from psychology, anthropology, and cultural evolution to suggest that conflict increases people's support for tightly regulated societies, which encourages their belief in more punitive deities.

Researchers have long investigated how religion influences culture and cognition, documenting its

effects on social inequality (Watts, Sheehan, Atkinson, Bulbulia, & Gray, 2016), cooperation (Norenzayan et al., 2016), aggression (Bushman et al., 2007), racial prejudice (M. K. Johnson, Rowatt, & LaBouff, 2010), and more. However, other recent research shows that religious belief is itself shaped by culture and cognition—and also by people's motivations (K. A. Johnson, Li, & Cohen, 2015). Individuals who feel a diminished sense of personal control may seek compensatory control through belief in a powerful God (Kay, Gaucher, Napier, Callan, & Laurin, 2008), whereas Christians who desire secure attachments may view God as more kind and loving (Kirkpatrick, 1998). Tuvans in southwest Siberia project their own pressing community concerns about alcoholism or theft onto the minds of their deities (Purzycki, 2016), and people living in famine-struck small-scale societies believe in gods who provide and protect food (Skoggard, Ember, Pitek, Jackson, & Carolus,

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in press). These studies and others (Jackson, Hester, & Gray, 2018) reveal that people actively construct and reconstruct religious beliefs to fulfill the psychological needs generated by their natural and cultural ecologies.

Conflict between groups has particularly powerful effects on psychological needs. Both violent conflict (e.g., warfare) and nonviolent conflict (e.g., conflicting beliefs and values) can threaten a group's existence. Historical analyses show that these types of conflict create environments of deep intergroup distrust and social upheaval (Bellows & Miguel, 2006; Nunn & Wantchekon, 2011; White et al., 2012) and increase the psychological appeal of safety, order, and rules imposed by leaders and institutions (Gelfand, 2018). For example, increasing the salience of violent conflict by priming events such as the terrorist attacks of September 11, 2001, or the Boston Marathon bombings leads people to support stronger law enforcement, freedom-limiting policies such as surveillance, and authoritarian leadership (Gelfand, 2018; Gelfand, Jackson, & Harrington, 2016; Landau et al., 2004). Nonviolent conflicts, such as ideological tensions between political and ethnic groups, are also linked to rises in authoritarianism (Jackson et al., 2019; McCann, 1999). On a larger scale, historical rates of conflict can predict the distribution of *cultural tightness*—the strictness of cultural norms—across current-day nations (Gelfand et al., 2011; Harrington & Gelfand, 2014).

The need for order engendered by conflict may lead people to put their faith not only in authoritarian leaders but also in punitive gods. Theories of moralizing religion demonstrate that punitive-God belief increases rule following and norm adherence (Norenzayan et al., 2016; Purzycki et al., 2016; Shariff & Norenzayan, 2011) and gives people a sense of control and justice (Kay et al., 2008). We suggest that these qualities of punitive gods are especially attractive during conflict and that they therefore lead people to believe in more punitive gods. For example, punitive gods could maintain cooperation and obedience during violent conflict and could be used to enforce tradition and religious identity during nonviolent conflict. Conflict may also increase belief in punitive gods if a general negativity bias leads people to anchor on their hostile surroundings and ascribe hostile characteristics to supernatural agents (Epley, Converse, Delbosc, Monteleone, & Cacioppo, 2009), but we believe that the functional benefits and psychological appeal of punitive gods during times of conflict should elicit belief in a punitive God above and beyond a general negativity bias.

## The Current Research

We conducted four studies to test whether conflict relates to increased belief in a punitive God. In Studies 1 and 2, we used correlational surveys at the individual

level to test whether people who feel more threatened by conflict believe in a more punitive God. We examined both American samples (Study 1) and international samples (Study 2). In Study 3, we experimentally tested whether making warfare salient increases the perceived importance of a punitive God and whether this effect is mediated by the desire for culturally tighter societies. In Study 4, we examined group-level evidence across 200 years, testing whether warfare increased the citation rate of Bible chapters in which the Abrahamic God was depicted as punitive. Several past studies have correlated ecological phenomena and religious beliefs (Botero et al., 2014; D. Johnson, 2005; Peoples & Marlowe, 2012; Roes & Raymond, 2003), but the current series of studies is the first to our knowledge to use this suite of methods to test hypotheses about the historical development of religion.

## Study 1: Conflict Salience and Punitive-God Belief in America

Do people who fear intergroup conflict also believe in a more punitive God? Study 1 tested whether belief in a punitive (versus loving) God correlates with the salience of conflict.

### Method

**Participants.** A power analysis indicated that a sample size of 400 participants would be sufficient to obtain a power of 80% for a small effect size ( $f^2$ ) of .02 ( $r = .14$ ). We therefore advertised for 400 American participants on Amazon Mechanical Turk. We included a screening question that asked people whether they believed in “a God or gods” and excluded all nonbelievers because they would not have any views of God to report on. We also excluded 19 participants who later identified as atheist or agnostic. A total of 372 individuals (age:  $M = 35.63$  years,  $SD = 11.10$ ; 209 women) who met these religious requirements, finished the survey, and passed an attention check were included in our analyses. The majority of participants ( $n = 330$ ) identified as Christian; 8 identified as Buddhist, 6 as Hindu, 6 as Jewish, 3 as Muslim, and 22 as “other” (some participants identified with multiple religions).

### Measures.

**Conflict salience.** To measure conflict salience, we asked participants to rate how concerned they were about attacks from Iran, attacks from North Korea, attacks from Russia, an influx of Syrian refugees, illegal immigration, and terrorist attacks. Participants rated how concerned they were about each item occurring on American soil on a scale from 1 (*not at all concerned*) to 5 (*very concerned*).

To rule out the possibility that a correlation between conflict and belief in a punitive God could arise from

a negativity bias (Epley et al., 2009)—resulting in heightened concern over negative events in general and also negative views of God—we also measured people’s concern over 18 negative events (e.g., poverty, corruption) that were unrelated to conflict (these negative events were measured with the same rating scale). Exploratory factor analysis with varimax rotation revealed that items measuring conflict (eigenvalue = 3.30) were distinct from other negative-event items (eigenvalue = 9.85). Loadings for the conflict factor were .86 for “attacks from Iran,” .79 for “attacks from North Korea,” .69 for “attacks from Russia,” .69 for “an influx of Syrian refugees,” .67 for “illegal immigration,” and .64 for “terrorist attacks.” Loadings for the other negative-events factors were .84 for “poverty,” .81 for “discrimination,” .79 for “climate change,” .78 for “pollution,” .74 for “legal injustice,” .74 for “lack of medical care,” .73 for “loss of housing,” .72 for “food deprivation,” .64 for “lack of jobs,” .57 for “gun violence,” .57 for “corruption,” .56 for “prescription-drug addiction,” .54 for “debt,” .53 for “natural disasters,” .52 for “illegal-drug addiction,” and .49 for “overcrowding.” Concerns over crime surges and diseases such as the Zika virus or Ebola loaded at or above .40 on both factors and were therefore excluded. We averaged across items separately for the conflict and negative-event factors to form composite scores for our *conflict index* ( $\alpha = .88$ ) and *negative-event index* ( $\alpha = .93$ ).

*Beliefs about God.* We measured both punitive- and loving-God beliefs to test for a unique relationship between conflict and punitive-God belief. Participants rated how characteristic they thought each of 18 punitive and loving adjectives (e.g., “angry,” “wrathful,” “compassionate,” “forgiving”) were of the God they believed in (ratings were made on a scale from 1 to 7; K. A. Johnson, Okun, & Cohen, 2015). Consistent with past research

(K. A. Johnson, Okun, & Cohen, 2015), results showed that punitive (eigenvalue = 5.21) and loving (eigenvalue = 6.10) adjectives loaded onto separate factors. Loadings for adjectives related to the loving factor were .86 for “compassionate,” .85 for “caring,” .85 for “generous,” .84 for “forgiving,” .82 for “gracious,” .81 for “helping,” .75 for “merciful,” .72 for “accepting,” and .47 for “tolerant,” and loadings for adjectives related to the punitive factor were .80 for “punishing,” .79 for “wrathful,” .78 for “stern,” .78 for “strict,” .73 for “angry,” .73 for “restricting,” .69 for “judging,” .65 for “commanding,” and .63 for “controlling.” We averaged ratings on these adjectives into distinct *punitive-God* ( $\alpha = .91$ ) and *loving-God* ( $\alpha = .92$ ) indices.

**Procedure.** Participants responded to all conflict and negative-event items and then reported on their views of God. After completing these measures, participants reported their age, gender, and other basic demographic information. These demographics included a measure of political conservatism ranging from 1 (*very liberal*) to 9 (*very conservative*) and a measure of general religiosity ranging from 1 (*not at all religious*) to 7 (*very religious*). Correlations between all study variables are reported in Table S8 in the Supplemental Material available online.

**Results**

**Belief in a punitive God.** In a multiple regression that regressed punitive-God belief on the conflict and negative-event indices, the conflict index significantly predicted punitive-God belief,  $b = 0.41$ ,  $\beta = 0.29$ ,  $SE = 0.08$ ,  $t(369) = 5.25$ ,  $p < .001$ ,  $R^2 = .06$ , whereas the negative-event index did not,  $b = 0.01$ ,  $\beta = 0.01$ ,  $SE = 0.09$ ,  $t(369) = 0.11$ ,  $p = .91$ ,  $R^2 < .001$  (see Table 1, Model 1). This finding supports the notion that the relationship between conflict and punitive-God belief is not simply explained by a general negativity bias.

**Table 1.** Results of Models Investigating Conflict Salience and God Beliefs in Study 1

| Dependent variable and predictor | <i>df</i> | Adjusted $R^2$ | <i>b</i> ( <i>SE</i> ) | $\beta$ | <i>t</i> | <i>p</i> |
|----------------------------------|-----------|----------------|------------------------|---------|----------|----------|
| Punitive-God belief (Model 1)    | 369       | .08            |                        |         |          |          |
| Conflict                         |           |                | 0.41 (0.08)            | 0.29    | 5.25     | < .001   |
| Negative events                  |           |                | 0.01 (0.09)            | 0.01    | 0.11     | .91      |
| Punitive-God belief (Model 2)    | 364       | .07            |                        |         |          |          |
| Conflict                         |           |                | 0.37 (0.09)            | 0.26    | 4.29     | < .001   |
| Negative events                  |           |                | 0.05 (0.10)            | 0.03    | 0.46     | .65      |
| Religiosity                      |           |                | 0.03 (0.06)            | 0.03    | 0.53     | .60      |
| Conservatism                     |           |                | 0.03 (0.04)            | 0.06    | 0.93     | .35      |
| Loving-God belief (Model 3)      | 369       | .07            |                        |         |          |          |
| Conflict                         |           |                | 0.05 (0.05)            | 0.05    | 0.95     | .34      |
| Negative events                  |           |                | 0.30 (0.06)            | 0.26    | 4.72     | < .001   |

We next tested whether the association between conflict salience and punitive-God belief remained after we controlled for other factors. Conflict salience still significantly predicted belief in a punitive God even when we controlled for political conservatism and overall levels of religiosity,  $b = 0.37$ ,  $\beta = 0.26$ ,  $SE = 0.09$ ,  $t(364) = 4.29$ ,  $p < .001$ ,  $R^2 = .04$  (see Table 1, Model 2), showing that these findings are not just specific to certain political orientations or to the highly religious.

**Belief in a loving God.** In a third multiple regression measuring loving-God belief, the conflict index did not predict loving-God belief,  $b = 0.05$ ,  $\beta = 0.05$ ,  $SE = 0.05$ ,  $t(369) = 0.95$ ,  $p = .34$ ,  $R^2 < .001$ , but the negative-events index did,  $b = 0.30$ ,  $\beta = 0.26$ ,  $SE = 0.06$ ,  $t(369) = 4.72$ ,  $p < .001$ ,  $R^2 = .05$  (see Table 1, Model 3). This association may have occurred because people view a more loving God as better suited to address social-welfare concerns (e.g., poverty, lack of health care), which made up a large number of the items in the negative-events index. These results supported our prediction that concern over conflict would be specifically tied to belief in a punitive God.

## Discussion

Conflict salience positively correlated with belief in a punitive God but not with belief in a loving God. These results could not be explained by a general negativity bias and held even when we controlled for political orientation and religious conviction. These findings suggest that concern over conflict is uniquely related to belief in a more punitive God.

## Study 2: Conflict Salience and Punitive-God Belief Across Nations

Study 2 tested whether the effects revealed in Study 1 would replicate in a larger international sample. Our goal was to address concerns of cultural generalizability. We hypothesized that increased concern over conflict would be related to more punitive-God belief, as in Study 1.

## Method

**Participants.** Our sample size, study design, hypotheses, and analytic plan were preregistered (a copy of the preregistration can be found at <https://osf.io/wtqde/>). Study 2 sampled participants from Germany, Singapore, Brazil, and the United States using a Qualtrics panel ([www.qualtrics.com](http://www.qualtrics.com)). Participants completed the survey in their country's official language: Participants from the

United States and Singapore completed the survey in English, Brazilians completed the study in Portuguese, and Germans completed the study in German. Translation was conducted by Qualtrics, which translates and back-translates surveys using professional translators.

We seeded a power analysis using the effect size of the relationship between conflict salience and belief in a punitive God from Study 1 ( $\beta = 0.29$ ). This power analysis indicated that 90 total participants would be able to detect a significant effect with sufficient power ( $1 - \beta = 0.80$ ). However, in order to estimate and account for potential differences in effect sizes across nations, we preregistered 250 participants from each nation, for a total of 1,000 participants. The Qualtrics panel recruited an additional 44 participants (who were all compensated), for a total of 1,044 participants. Following our preregistration, we excluded all participants who did not believe in God or who were polytheistic. We wanted to avoid the possibility of confounding culture with belief type, given the higher population of polytheists in Singapore than in the other countries sampled, and we would have lacked the power to meaningfully explore effects separately for polytheists in the other countries. Excluding 64 nonbelievers and 69 polytheists left a sample of 911 participants (484 women, 427 men; age:  $M = 28.12$  years,  $SD = 16.30$ ; 372 Catholic, 345 Protestant, 46 Muslim, 13 Jewish, 2 Sikh, and 133 "other"; 195 from Singapore, 226 from Brazil, 245 from the United States, and 245 from Germany).

We selected Germany and Singapore because they represent two generally tight countries—each of which has strict social norms and strong punishments for breaking those norms—and Brazil and the United States because they represent two generally loose countries—which have laxer social norms (Gelfand, 2018; Gelfand et al., 2011). We wanted to test whether the link between conflict and belief in a punitive God was similar across these tight and loose cultures.

## Measures.

**Conflict salience.** Participants in Study 2 rated their concern about a subset of the conflict and negative events from Study 1, which were chosen on the basis of their fit to an international sample. Participants rated how concerned they were about each item happening to their country on a scale from 1 (*not at all concerned*) to 5 (*very concerned*). A 244-person pilot study conducted across the four countries (summarized in the Supplemental Material) revealed a two-factor solution similar to the solution we observed in Study 1: One factor contained the four conflict items (terrorism attacks, influx of refugees, attack from a foreign nation, and illegal immigration), and the other factor contained the seven negative-event items



**Table 2.** Cronbach’s Alpha for Each Measure in Each Nation in Study 2

| Nation        | Conflict | Negative events | Loving God | Punitive God | Religiosity |
|---------------|----------|-----------------|------------|--------------|-------------|
| Brazil        | .81      | .83             | .91        | .84          | .78         |
| United States | .81      | .90             | .87        | .88          | .87         |
| Germany       | .83      | .80             | .92        | .86          | .81         |
| Singapore     | .83      | .89             | .93        | .86          | .88         |

(natural disasters, climate change, pollution, discrimination, crime surge, debt, and the spread of disease). Our pilot study also contained an additional item, loss of cultural identity, which loaded with the conflict scale. However, we removed this item from our main study because we felt it did not represent conflict.

Given the results of Study 1 and our pilot study, we preregistered a four-item conflict factor and a seven-item negative-events factor containing the items from our pilot study. Confirmatory factor analyses within each nation revealed that these two factors showed appropriate fit for each of the four nations when nation-specific modifications were specified. Both the conflict factor ( $\alpha = .82$ ) and the negative-event factor ( $\alpha = .87$ ) were highly reliable. See the Supplemental Material for fit statistics (Table S2) as well as a discussion of the structure of threats across cultures. Reliability coefficients for all measures in all nations are reported in Table 2.

*Beliefs about God.* Participants rated six of the adjectives from Study 1 to indicate how punitive (“strict,” “wrathful,” “punishing”) and loving (“helping,” “compassionate,” “merciful”) they believed God to be. As in Study 1, we averaged across items in each of these factors to form composite scores for the punitive-God index (eigenvalue = 2.63,  $\alpha = .86$ ) and the loving-God index (eigenvalue = 2.35,  $\alpha = .92$ ).

*Religiosity.* Because single-item measures of religiosity can be unreliable across cultures (Bluemke, Jong, Grevenstein, Mikloušić, & Halberstadt, 2016), we also asked participants to complete a six-item measure of religiosity that has been validated for cross-cultural research (Jong & Halberstadt, 2016). The scale showed high reliability ( $\alpha = .84$ ).

*Procedure.* Participants responded to all conflict and negative-event items and reported on their beliefs about God and their religiosity. At the end of the survey, participants completed a brief demographics questionnaire which included a measure of political conservatism ranging from 1 (*very liberal*) to 9 (*very conservative*), as in Study 1.

## Results

**Belief in a punitive God.** In a multiple regression that included participants from all four nations and that regressed punitive-God belief on indices for conflict and negative events, conflict significantly predicted punitive-God belief,  $b = 0.32$ ,  $\beta = 0.19$ ,  $SE = 0.07$ ,  $t(908) = 4.57$ ,  $p < .001$ ,  $R^2 = .02$ , whereas negative events did not,  $b = 0.02$ ,  $\beta = 0.01$ ,  $SE = 0.08$ ,  $t(908) = 0.23$ ,  $p = .82$ ,  $R^2 < .001$  (see Table 3, Model 1), indicating that the relationship between conflict and punitive-God belief is not explained by a general bias toward negativity. As in Study 1, this effect was replicated when we controlled for general religiosity and political conservatism,  $b = 0.22$ ,  $\beta = 0.13$ ,  $SE = 0.07$ ,  $t(906) = 3.10$ ,  $p = .002$ ,  $R^2 = .01$  (see Table 3, Model 2).

Did this effect vary across tight and loose nations? To examine this, we created a binary variable that coded nations as either tight (1) or loose (0) on the basis of their classification in Gelfand et al.’s (2011) study. An additional model showed that the effect of conflict on punitive-God belief did not vary across tight and loose nations,  $b = 0.12$ ,  $\beta = 0.03$ ,  $SE = 0.11$ ,  $t(904) = 1.06$ ,  $p = .29$ ,  $R^2 < .001$  (see Table 3, Model 3), indicating that the relationship between conflict salience and punitive-God belief was not moderated by nation-level tightness.

**Belief in a loving God.** In a subsequent multiple regression, conflict did not significantly predict loving-God belief,  $b = -0.03$ ,  $\beta = -0.03$ ,  $SE = 0.04$ ,  $t(906) = -0.84$ ,  $p = .40$ ,  $R^2 < .001$ , but negative events did,  $b = 0.29$ ,  $\beta = 0.22$ ,  $SE = 0.05$ ,  $t(906) = 6.18$ ,  $p < .001$ ,  $R^2 = .03$  (see Table 3, Model 4). Each of these effects replicated the pattern of results that we observed in Study 1.

### Conflict and punitive-God belief across nations.

Although the link between conflict salience and punitive-God belief occurred across the combined four countries, effect sizes varied within countries: Singapore ( $\beta = 0.23$ ) and Brazil ( $\beta = 0.23$ ), United States ( $\beta = 0.11$ ), and Germany ( $\beta = 0.03$ ). However, a random-effects meta-analysis showed that this variation was not statistically significant,  $Q(3) = 6.36$ ,  $p = .10$ , and may have simply resulted from sampling error. Our Supplemental Material describes this meta-analysis in more detail and summarizes unstandardized effects, standard errors, and  $t$  and  $p$  values for the association between conflict salience and punitive-God belief in each nation.

## Discussion

Conflict salience predicted belief in a punitive (but not a loving) God in an international sample. This association did not significantly differ across the tight and loose cultures in this study and was replicated when we

**Table 3.** Results of Models Investigating Conflict Salience and God Beliefs Internationally in Study 2

| Dependent variable and predictor | <i>df</i> | Adjusted <i>R</i> <sup>2</sup> | <i>b</i> ( <i>SE</i> ) | $\beta$ | <i>t</i> | <i>p</i> |
|----------------------------------|-----------|--------------------------------|------------------------|---------|----------|----------|
| Punitive-God beliefs (Model 1)   | 908       | .04                            |                        |         |          |          |
| Conflict                         |           |                                | 0.32 (0.07)            | 0.19    | 4.57     | < .001   |
| Negative events                  |           |                                | 0.02 (0.08)            | 0.01    | 0.23     | .82      |
| Punitive-God beliefs (Model 2)   | 906       | .05                            |                        |         |          |          |
| Conflict                         |           |                                | 0.22 (0.07)            | 0.13    | 3.10     | .002     |
| Negative events                  |           |                                | 0.07 (0.08)            | 0.03    | 0.80     | .42      |
| Religiosity                      |           |                                | 0.08 (0.04)            | 0.07    | 2.17     | .03      |
| Conservatism                     |           |                                | 0.10 (0.03)            | 0.12    | 3.38     | < .001   |
| Punitive-God beliefs (Model 3)   | 904       | .06                            |                        |         |          |          |
| Conflict                         |           |                                | 0.20 (0.07)            | 0.12    | 2.72     | .007     |
| Negative events                  |           |                                | 0.13 (0.09)            | 0.07    | 1.54     | .12      |
| Religiosity                      |           |                                | 0.10 (0.04)            | 0.09    | 2.58     | .01      |
| Conservatism                     |           |                                | 0.12 (0.03)            | 0.13    | 3.87     | < .001   |
| Tightness                        |           |                                | 0.39 (0.12)            | 0.11    | 3.25     | .001     |
| Conflict $\times$ Tightness      |           |                                | 0.12 (0.11)            | 0.03    | 1.06     | .29      |
| Loving-God beliefs (Model 4)     | 906       | .35                            |                        |         |          |          |
| Conflict                         |           |                                | -0.03 (0.04)           | -0.03   | -0.84    | .40      |
| Negative events                  |           |                                | 0.29 (0.05)            | 0.22    | 6.18     | < .001   |
| Religiosity                      |           |                                | 0.42 (0.02)            | 0.54    | 19.58    | < .001   |
| Conservatism                     |           |                                | 0.02 (0.02)            | 0.03    | 0.93     | .35      |

Note: For Model 3, terms used in the interaction have been centered.

controlled for political orientation, religiosity, and a general negativity bias. As predicted, people from different cultures who feared conflict also believed in a more punitive God.

### Study 3: The Causal Effect of Conflict Salience on Punitive-God Support

In Study 3, we experimentally manipulated the salience of conflict to test the hypothesis that increased conflict salience would increase the perceived importance of a punitive God. Furthermore, given that people support stricter norms and greater rule following (i.e., cultural tightness) during times of conflict (Gelfand et al., 2011; Harrington & Gelfand, 2014) and that belief in punitive gods is effective at instilling these behaviors (Shariff & Norenzayan, 2011), we predicted that people's support for cultural tightness would mediate the relationship between conflict salience and the importance of a punitive God.

#### Method

**Participants.** Our sample size, study design, hypotheses, and analytic plan were preregistered (a copy of the preregistration can be found at <https://osf.io/acpb9/>). An a priori *F*-test power analysis with three conditions suggested that a total sample size of 1,071 participants would be required to detect a small effect size ( $f = .095$ ) with adequate power

( $1 - \beta = 0.80$ ). To account for attention-check failure, we recruited a total of 1,200 participants.

As in Studies 1 and 2, we recruited only participants who believed in God for this survey. We used the same screening item and exclusion criteria as in Study 1. Ninety-five people who later identified as atheist or agnostic were excluded from analyses. As specified in our preregistration, we excluded 48 participants who failed an attention check designed to confirm that they had fully read the manipulation (the question asked what they had read about at the beginning of the survey). Excluded participants either wrote inaccurate descriptions of the manipulation or admitted that they had forgotten what they had read. This left a final sample size of 1,065 individuals (544 women, 521 men; age:  $M = 37.96$  years,  $SD = 12.12$ ). The majority of participants ( $n = 943$ ) identified as Christian; 28 identified as Buddhist, 23 as Jewish, 15 as Hindu, 5 as Muslim, 1 as Sikh, and 61 as "other" (some participants identified with multiple religions).

**Manipulation.** Each participant was randomly assigned to read one of three vignettes depicting America in the year 2025. Participants in the conflict condition read about an America fighting World War III. The vignette described an international conflict that had escalated to warfare, with foreign attacks occurring on American soil. The vignette in the neutral control condition described an America at peace with no immediate risk of conflict. A

**Table 4.** Means Ratings for the Dependent Variables in Study 3

| Variable                | Conflict condition |              | Poverty condition |              | Peace condition |              |
|-------------------------|--------------------|--------------|-------------------|--------------|-----------------|--------------|
|                         | <i>M</i>           | 95% CI       | <i>M</i>          | 95% CI       | <i>M</i>        | 95% CI       |
| Punitive-God importance | 3.95               | [3.80, 4.09] | 3.26              | [3.11, 3.41] | 3.26            | [3.10, 3.41] |
| Loving-God importance   | 5.64               | [5.52, 5.75] | 5.98              | [5.86, 6.10] | 6.01            | [5.89, 6.13] |

Note: CI = confidence interval.

second, negative-events control condition—included to mirror the other negative-events factor in Studies 1 and 2—described an America facing a sharp increase in poverty. The passages used in this manipulation are available in the Supplemental Material online (Table S5).

### Measures.

**Support for cultural tightness.** Participants indicated their support for cultural tightness using a seven-item scale adapted from a scale created by Jackson et al. (2019). Participants read seven incomplete sentences (see Table S6 in the Supplemental Material for the full set of statements) and were prompted to respond using a scale from 1 to 9 in a way that indicated their level of support for cultural tightness in the hypothetical future society in our prime. For example, participants read the sentence, “In the face of the conditions described above, it would be important that this future society . . .” and responded from 1 (*be permissive*) to 9 (*be restrictive*). The scale was reliable ( $\alpha = .86$ ).

**Punitive- and loving-God importance.** Participants completed an adapted form of the 18-item scale measuring beliefs about God (K. A. Johnson, Okun, & Cohen, 2015) from Study 1, in which they responded to the prompt, “How important do you think it would be for God to have the following traits in this future society?” This approach was slightly different from that of Study 1, in which we asked participants about their beliefs in God as punitive versus loving. We reasoned that a brief manipulation would be unlikely to change people’s religious beliefs and that a better measure of religion would be the importance that participants, as members of this hypothetical future society, placed on the punitive versus loving traits of God. As in Study 1, a two-factor solution was a good fit to the data, with highly reliable factors for a punitive God (eigenvalue = 7.33,  $\alpha = .94$ ) and a loving God (eigenvalue = 4.56,  $\alpha = .93$ ). We averaged across items within each of these two factors to create a loving-God index and a punitive-God index.

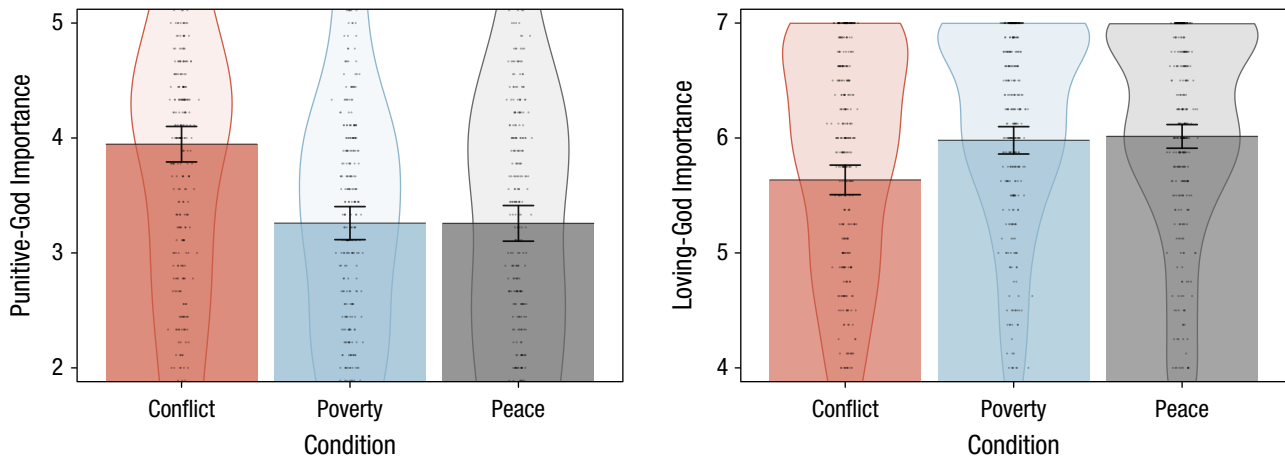
**Procedure.** Each participant was randomly assigned to the conflict condition, the peace condition (neutral control), or the poverty condition (negative-events control). After reading the vignettes describing the assigned future

society, participants rated their support for cultural tightness and then rated how important they thought loving and punitive characteristics of God would be in this future society. At the end of the survey, participants completed an attention-check question, which asked them to describe the society they had read about, and then a brief demographics questionnaire that included the same measures of political conservatism and general religiosity as the questionnaire in Study 1.

### Results

**Effect of conflict salience on beliefs about God.** As predicted, there was a significant omnibus effect of condition on the importance of a punitive God,  $F(2, 1062) = 27.22, p < .001, \eta^2 = .05$ . Participants in the conflict condition rated punitive-God characteristics as more important than did people in the poverty condition (mean difference = 0.69,  $p < .001$ ) and in the peace condition (mean difference = 0.69,  $p < .001$ ; see Table 4 for descriptive statistics by condition). There was no significant difference in punitive-God importance between the poverty and peace conditions (mean difference = 0.002,  $p = .99$ ), suggesting that belief in a punitive God was driven specifically by conflict and not by negativity more generally. Further, conflict seemed to decrease the reported importance of a loving God. An omnibus test of the effect of condition on the importance of a loving God was significant,  $F(2, 1062) = 12.41, p < .001, \eta^2 = .02$ . People rated loving-God characteristics as less important in the conflict condition than in the poverty condition (mean difference = 0.34,  $p < .001$ ) and in the peace condition (mean difference = 0.38,  $p < .001$ ). The importance of a loving God was not significantly different between the poverty and peace conditions (mean difference = 0.03,  $p = .69$ ), suggesting that conflict may increase punitive-God belief at the expense of loving-God belief. See Figure 1 for an illustration of these effects.

As in Studies 1 and 2, we tested whether the effect of conflict on the importance of a punitive God held when participant religiosity and political conservatism were entered into the model as covariates. An analysis of covariance showed that the effect of condition remained significant even when controlling for religiosity and political ideology,  $F(2, 1060) = 25.39, p < .001$ ,



**Fig. 1.** Effect of (a) the importance of punitive-God characteristics and (b) the importance of loving-God characteristics in each of the three conditions of Study 3. The height of each data bar indicates the mean. Each dot within the violin plot is an individual data point, and the width of the plot indicates the density of the data. Error bars represent 95% confidence intervals.

$\eta^2 = .05$ . Participants in the conflict condition rated punitive-God characteristics as more important than did people in the poverty condition (mean difference = 0.62,  $p < .001$ ), or the peace condition (mean difference = 0.62,  $p < .001$ ), and there was no difference in punitive-God importance between the poverty and peace conditions (mean difference = 0.00,  $p > .99$ ). Because all analyses to this point revealed no difference between the two control conditions (poverty and peace) on the importance of either a punitive or a loving God ( $ps > .92$ ), we used contrast coding for future analyses, in which we contrasted the conflict condition against the other two control conditions: poverty and peace (0 = control conditions, 1 = conflict condition).

#### **Mediation through support for cultural tightness.**

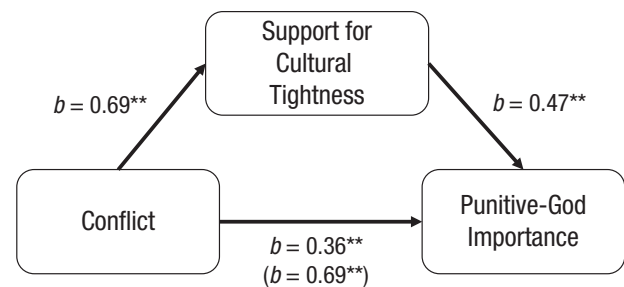
We next tested whether support for cultural tightness could explain the effect of experimental condition on reported importance of a punitive God. A 5,000-sample bootstrap estimation of the indirect effect of conflict on punitive-God importance through support for cultural tightness was consistent with significant mediation,  $b = 0.33$ , 95% confidence interval (CI) = [0.23, 0.43]. Regression confirmed that participants in the conflict condition were more supportive of cultural tightness than participants in the control conditions,  $b = 0.69$ ,  $\beta = 0.21$ ,  $SE = 0.10$ ,  $t(1063) = 6.98$ ,  $p < .001$ ,  $R^2 = .04$ . Support for cultural tightness in turn predicted the reported importance of punitive-God characteristics,  $b = 0.50$ ,  $\beta = 0.53$ ,  $SE = 0.02$ ,  $t(1063) = 20.27$ ,  $p < .001$ ,  $R^2 = .28$ , an association that held when analyses controlled for condition,  $b = 0.47$ ,  $\beta = 0.50$ ,  $SE = 0.02$ ,  $t(1062) = 19.07$ ,  $p < .001$ ,  $R^2 = .24$ . See Figure 2 for a depiction of this mediation.

Conflict still significantly predicted the reported importance of a punitive God when we controlled for support for cultural tightness, indicating partial

mediation,  $b = 0.36$ ,  $\beta = 0.12$ ,  $SE = 0.08$ ,  $t(1062) = 4.37$ ,  $p < .001$ ,  $R^2 = .01$  (see Fig. 2 for mediational path). These results support a model in which conflict increases support for cultural tightness, which in turn increases belief in a punitive God. Nevertheless, partial mediation suggests that there were other unmodeled factors that explained why conflict increased the importance of a punitive God. One possibility is that people may outsource their desire to punish others—in this case, hostile out-groups—to God (Laurin, Shariff, Henrich, & Kay, 2012), leading to more punitive-God belief. This explanation should be explored in future research.

#### **Discussion**

Experimentally increasing the salience of conflict increased the perceived importance of punitive traits of God, compared with a neutral control condition (peace) and a negative control condition (poverty). The causal association between conflict and importance of



**Fig. 2.** Mediation model showing the effect of conflict on punitive-God importance, as mediated by support for cultural tightness in Study 3. On the path from conflict to punitive-God importance, the value outside parentheses is the direct effect, and the value inside parentheses is the total effect. Asterisks indicate significant paths ( $p < .001$ ).



a punitive God was mediated by support for cultural tightness, suggesting that people desire a more punitive God during periods of conflict because they want tighter, more regulated societies.

### Study 4: Historical Conflict and Biblical Representations of God

In Study 4, we investigated real-world fluctuations in conflict and punitive-God belief to test whether conflict could predict punitive-God belief over time. We used Google Books to compile data from the years 1800 to 2000 on the frequency of literary citations of Old Testament Bible chapters in which God was depicted as either punitive or loving, and we collected data on violent conflicts from the same years. Analyzing the citation frequency of different Bible chapters offers a particularly clear view of people's beliefs about God at specific points in time. We hypothesized that conflict would predict and precede punitive-God belief over time.

#### Method

##### Measures.

*Beliefs about God.* To measure changes in punitive- and loving-God belief over time, we compiled Bible chapter citations using the Google Books English-language corpus—the largest and most highly powered of all Google Books corpora—which contains 189 billion words from books published in English around the world. It thus offers a precise and ecologically valid window into cultural changes over time (Michel et al., 2011). There are some limitations to analyzing the Google Books corpus (e.g., scientific jargon; Pechenick, Danforth, & Dodds, 2015), but these are not relevant for examining Bible chapter citations in written text.

Prior to conducting any analyses (so as not to bias our results), we identified 10 Bible chapters in which the Abrahamic God was represented as punitive (e.g., “By the breath of God they perish, and by the blast of his anger they are consumed,” Job 4), 10 chapters in which God was represented as loving (e.g., “O give thanks to the Lord, for he is good, for his steadfast love endures forever,” Psalm 136), and 10 chapters in which God was not represented with any particular punitive or loving traits. We scraped data from the Google Ngram Viewer on how frequently these different chapters were referenced by name (e.g., “Job 4” or “Psalm 136”) in published English works between 1800 and 2000, and we compiled these reference rates into separate punitive-, loving-, and neutral-chapter indices. We used the neutral-chapter citations as a control index in each of our analyses to covary out general fluctuations in references to the Bible over time. The Supplemental

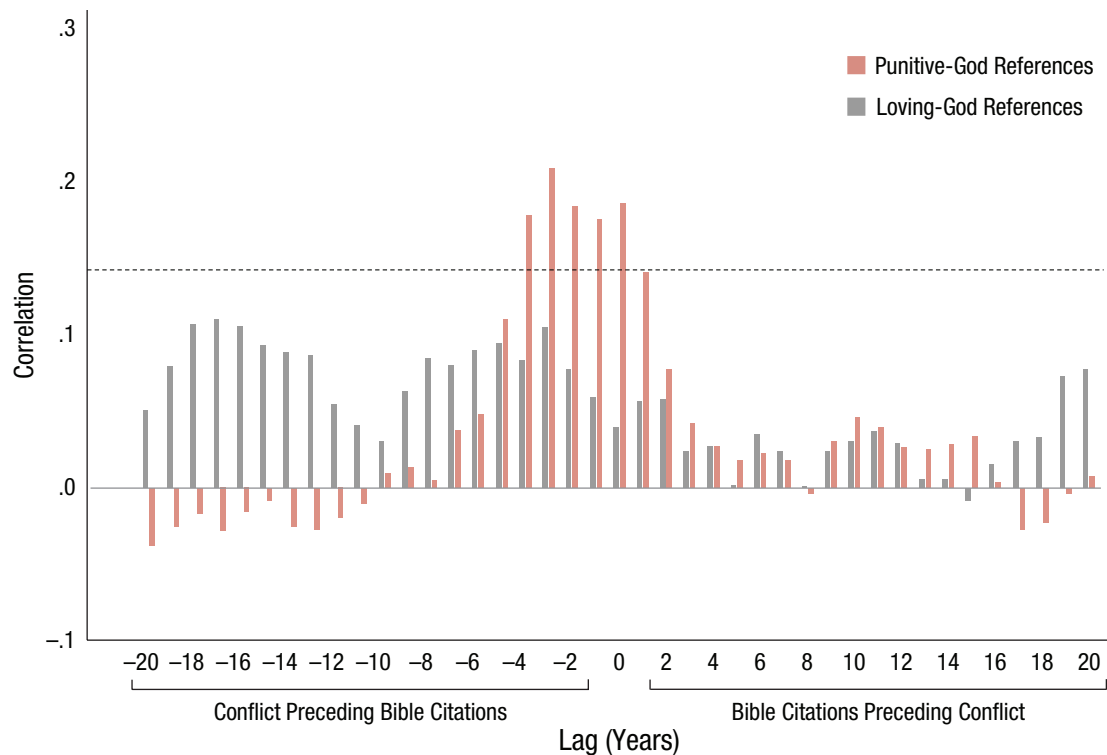
Material contains the full list of Bible chapters included in these indices (Table S7).

*Conflict.* To measure fluctuations in the salience of conflict over time, we used data from the Conflict Catalog (Brecke, 2001), which logs the number of worldwide deaths from war every year from 1400 CE to the present day. We narrowed our use of the data to the years 1800 to 2000 to match the time frame of our Google Books data. Given that the items that composed the conflict factor in Study 1 were focused on warfare, invasion, and attacks, the use of actual warfare data as an operationalization of conflict over time was a natural next step. The Conflict Catalog defines violent conflict as “an occurrence of purposive and lethal violence among two or more social groups pursuing conflicting political goals that results in fatalities, with at least one belligerent group organized under the command of authoritative leadership” (Brecke, 1999, p. 3). This definition matches how we measured and manipulated violent conflict in our previous studies.

*Detrending time series.* Many time-series analytic methods carry the assumption of stationarity: that the data do not have underlying trends that bias analyses of their change over time or their multivariate relationships. There are many approaches to making data stationary, one of which is to detrend data by controlling for the monotonic effect of time. Prior to conducting any analyses, we detrended our time-series vectors measuring conflict, the punitive-chapter citations, and the loving-chapter citations on the basis of year and neutral-chapter citations in order to remove autoregressive trends associated with changing general levels of religious conviction or the passage of time. We then subjected each time series to augmented Dickey-Fuller root tests, which evaluate whether a time series has an underlying trend that renders it nonstationary. This test revealed significant results for punitive-chapter citation rates ( $p < .001$ ), loving-chapter citation rates ( $p = .002$ ), and deaths due to conflict ( $p < .001$ ), supporting the stationarity of our time-series data and making our data suitable for time-series analysis.

#### Results

*Correlating conflict and beliefs about God.* We standardized all variables prior to analysis because of the vastly different scales on which our variables are measured. Regressions revealed that conflict was indeed associated with citations of Bible chapters portraying God as punitive,  $\beta = 0.19$ ,  $SE = 0.07$ ,  $t(192) = 2.63$ ,  $p = .009$ ,  $R^2 = .03$ , but not as loving,  $\beta = 0.04$ ,  $SE = 0.07$ ,  $t(192) = 0.56$ ,  $p = .58$ ,  $R^2 < .001$ . These findings supported our prediction that the increased salience of conflict, captured here by the number of war-related deaths, would be related to increased punitive-God belief.



**Fig. 3.** Cross-correlations between warfare deaths and punitive-God Bible chapter references (red) and loving-God Bible chapter references (gray) in Study 4. Each bar represents a correlation, and the  $x$ -axis represents the correlation's lag. Negative time lags represent the number of years by which warfare deaths preceded Bible chapter citations, and positive time lags represent the number of years by which Bible chapter citations preceded warfare deaths. The dashed line signifies the threshold for significant correlations.

Given that our analyses used the Google Books English-language corpus, we next tested whether effects varied across conflicts that involved English-speaking versus non-English-speaking nations. We broke the Conflict Catalog into two data sets, one including conflicts that involved English-speaking nations and one including conflicts that did not involve English-speaking nations. We detrended the time-series vectors using the same approach as for the full data set (Dickey-Fuller root test,  $ps < .02$ ). Conflict was associated with punitive-chapter citations for both conflicts that involved English-speaking nations,  $\beta = 0.20$ ,  $SE = 0.09$ ,  $t(113) = 2.15$ ,  $p = .03$ ,  $R^2 = .03$ , and conflicts that did not involve English-speaking nations,  $\beta = 0.18$ ,  $SE = 0.07$ ,  $t(178) = 2.49$ ,  $p = .01$ ,  $R^2 = .03$ . Conflict was not associated with loving-chapter citations for either conflicts involving English-speaking nations,  $\beta = 0.04$ ,  $SE = 0.09$ ,  $t(113) = 0.45$ ,  $p = .65$ ,  $R^2 < .001$ , or conflicts involving non-English-speaking nations,  $\beta = 0.02$ ,  $SE = 0.07$ ,  $t(178) = 0.31$ ,  $p = .76$ ,  $R^2 < .001$ . This suggests that conflicts involving non-English speakers may have still been salient to English speakers, therefore affecting references to God and the Bible in contemporary English writings. These results suggest that increased conflict

salience is related to increased punitive-God belief. However, these regression analyses do not imply causality or precedence, only co-occurrence.

**Cross-correlation.** We next used cross-correlation to test whether conflict preceded belief in a more punitive God across all conflicts involving both English-speaking and non-English-speaking nations. Cross-correlation estimates the correlation between two variables at different time-lagged intervals. In our analysis, positive lags imply that punitive-God belief precedes changes in conflict, whereas negative lags imply that conflict precedes changes in punitive-God belief (see Fig. 3). Our cross-correlation analysis revealed a significant and negatively lagged relationship between conflict (fatalities in war) and punitive-God belief (citations of punitive Bible chapters) over time, with the strongest correlation at a lag of 3 years,  $r = .23$ ,  $p = .001$ . A lag of such a length is meaningful because it allows time for writing and publishing a work. There was no significant correlation at any time lag between war fatalities and references to loving-God chapters.

**Granger test of causality.** We next conducted Granger tests of causality, which also evaluate lagged effects.

**Table 5.** Granger Test of Causality Results From Study 4

| Lag      | Result                              |
|----------|-------------------------------------|
| 1 year   | $F(1, 191) = 3.19, p = .08^\dagger$ |
| 2 years  | $F(2, 189) = 3.92, p = .02^*$       |
| 3 years  | $F(3, 187) = 2.56, p = .06^\dagger$ |
| 4 years  | $F(4, 185) = 2.13, p = .08^\dagger$ |
| 5 years  | $F(5, 183) = 1.69, p = .14$         |
| 6 years  | $F(6, 181) = 1.38, p = .23$         |
| 7 years  | $F(7, 179) = 1.15, p = .33$         |
| 8 years  | $F(8, 177) = 1.18, p = .32$         |
| 9 years  | $F(9, 175) = 1.17, p = .32$         |
| 10 years | $F(10, 173) = 1.09, p = .38$        |

$^\dagger p < .10$ .  $^* p < .05$ .

Granger tests of causality, however, are more conservative than cross-correlations because they evaluate whether one time-series variable ( $x$ ) predicts changes to another time-series variable ( $y$ ), even when controlling for earlier values of  $y$ . This offers a form of causal inference in time-series data that while not as strong as experimental design, is stronger than correlational effects. We conducted Granger tests of causality at time lags from  $t - 1$  to  $t - 10$  years. Results indicated significant results at a lag of  $t - 2$  years. That is, deaths in violent conflict at time  $t$  could predict punitive-God belief 2 years in the future, even when analyses control for punitive-God belief at time  $t$ . There were also marginally significant results at lags of  $t - 1$ ,  $t - 3$ , and  $t - 4$  years (see Table 5 for full results). No lags revealed significant effects of deaths in violent conflict on loving-God belief at any time point.

These results converge with our cross-correlation lagged effects. In both tests, there was evidence that conflict preceded increased punitive-God belief and that this was not due to (a) underlying autoregressive trends, (b) changing levels of religious conviction, or (c) a third variable producing change in both focal variables.

## Discussion

Time-series analyses indicated that historical levels of conflict can predict real-world changes in people's religious beliefs. People appeared to conceptualize the Abrahamic God as a more punitive (and not a more loving) figure in the years following highly impactful violent conflict. Conflict best predicted punitive-God belief at a lag of 2 to 3 years.

## General Discussion

Religion and conflict both profoundly influence human culture—and each other. Although scholarly thought has focused on whether religion drives conflict (Benda & Toombs, 2000; Bushman et al., 2007; Ginges et al.,

2009; K. A. Johnson, Li, Cohen, & Okun, 2013), recent perspectives suggest that conflict may also shape religious belief (Henrich et al., 2019). Our results join this emerging literature and show that conflict changes how people view God by increasing belief in punitive representations of God. Studies 1 and 2 found that the salience of conflict correlated with belief in a more punitive God, Study 3 showed that experimentally manipulating the salience of conflict increased the perceived importance of a punitive God, and Study 4 found that historical levels of conflict predicted and preceded increases in descriptions of the Abrahamic God as punitive. In each of these four studies, conflict had no relationship with beliefs about God as loving, and other negative events did not increase punitive-God belief.

We suggest that conflict changes people's group-based motivations, orienting people away from a preference for freedom and expressivity and toward a preference for order and obedience to rules. Because beliefs in punitive gods are better able to preserve order and enforce traditions (Norenzayan et al., 2016; Purzycki et al., 2016; Shariff & Norenzayan, 2011), people may view these types of gods as particularly attractive during times of conflict. Consistent with this mechanism, our results showed that support for cultural tightness mediated the relationship between experimentally induced conflict salience and the perceived importance of a punitive God. Because our results support a partial mediation, there may be other properties of conflict that make belief in a punitive God more attractive. For example, conflict may breed hostility toward outsiders, and people may egotistically project these attitudes onto their God (Epley et al., 2009). It is also possible that people might believe in a punitive God as a means of outsourcing their desire to punish others (Laurin et al., 2012), and this could extend to hostile groups.

Our findings complement past cultural evolutionary theories of religion (D. Johnson, 2005; Norenzayan et al., 2016). These theories suggest that punitive-God representations evolve and spread over time because they confer an adaptive advantage to the groups that hold them (D. Johnson, 2016; Norenzayan et al., 2016; Sosis & Alcorta, 2003). Whereas these models deal with long-term changes in religious belief resulting from cultural-group selection, our studies show how changes to ecology can catalyze rapid transformations in religious belief as a function of people's proximal motivations. Regardless of whether punitive gods are functional during times of conflict, the perception that they are functional appears sufficient to explain significant religious changes over short periods of time.

The current studies also present several opportunities for future research. The samples for these studies, although international, were mainly composed of adherents to monotheistic religions (mostly Christianity). It is possible

that belief in multiple gods would preclude the necessity to change one's belief about any one god, since many polytheistic religions tend to believe in gods who take on different traits. It therefore would be worth investigating whether—and if so, how—results might differ in a polytheist sample. Future research could also investigate whether people or groups use punitive-God belief to justify ongoing conflict and whether the outcomes of conflict (i.e., victory or defeat) shape beliefs about God.

Our findings show how conflict can actively shape people's representations of God, leading to both short-term and long-term religious change. Looking forward, this model of religious representations could also prove useful in predicting the future of religious belief and in understanding larger-scale religious shifts across individuals and cultural groups.

## Transparency

*Action Editor:* Ayse K. Uskul

*Editor:* D. Stephen Lindsay

### Author Contributions

N. Caluori and J. C. Jackson conceptualized the research program. All authors contributed to the design of the studies. N. Caluori and J. C. Jackson collected and analyzed the data. N. Caluori wrote the manuscript. All authors contributed to revisions of the manuscript and gave final approval for publication.

### Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

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### Open Practices

Analysis scripts and deidentified data have been made publicly available via the Open Science Framework and can be accessed at <https://osf.io/uskbm/>. For an explanation of the variable names in each data spreadsheet, see the R code for that study. Studies 2 and 3 were preregistered on [AsPredicted.org](https://AsPredicted.org), and copies of these preregistrations can be found at <https://osf.io/wtqde/> and <https://osf.io/fygv2/>, respectively. Note that these studies were not initially included in the manuscript when it was first submitted (February 21, 2019). These studies were run in response to reviewer comments and were preregistered beforehand (May 24, 2019). The manuscript was then resubmitted (July 30, 2019). The complete Open Practices Disclosure for this article can be found at <http://journals.sagepub.com/doi/suppl/10.1177/0956797619895286>. This article has received

the badges for Open Data and Preregistration. More information about the Open Practices badges can be found at <http://www.psychologicalscience.org/publications/badges>.



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## Supplemental Material

Additional supporting information can be found at <http://journals.sagepub.com/doi/suppl/10.1177/0956797619895286>

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