

Outsourcing punishment to God: beliefs in divine control reduce earthly punishment

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The sanctioning of norm-transgressors is a necessary—though often costly—task for maintaining a well-functioning society. Prior to effective and reliable secular institutions for punishment, large-scale societies depended on individuals engaging in ‘altruistic punishment’—bearing the costs of punishment individually, for the benefit of society. Evolutionary approaches to religion suggest that beliefs in powerful, moralizing Gods, who can distribute rewards and punishments, emerged as a way to augment earthly punishment in large societies that could not effectively monitor norm violations. In five studies, we investigate whether such beliefs in God can replace people’s motivation to engage in altruistic punishment, and their support for state-sponsored punishment. Results show that, although religiosity generally predicts higher levels of punishment, the specific belief in powerful, intervening Gods reduces altruistic punishment and support for state-sponsored punishment. Moreover, these effects are specifically owing to differences in people’s perceptions that humans are responsible for punishing wrongdoers.

Keywords: religion; punishment; altruistic punishment; cooperation; cultural evolution

Ensuring due punishment for moral transgressors is a costly, but necessary, business in large-scale, complex, human societies. When transgressors go free, there is no deterrence against future transgressions, which, according to experimental studies, allows free-riders and cheats to thrive [1,2]. Meting out punishment, however, means incurring the costs of identifying and apprehending wrongdoers, and risking resistance and revenge. Indeed, modern societies invest considerable resources in legal and policing institutions to tackle these problems [3]. Evolutionary accounts of religion suggest that the need for costly punishment, which grew as human societies expanded following the origins of agriculture, partially prompted the cultural spread of beliefs in morally concerned Gods who could distribute punishments and rewards [4–6].

An important and untested implication of this line of reasoning is that some religious adherents may often view punishment as ‘God’s job’. Specifically, those who believe that a God actively assigns moral punishments may be demotivated from administering punishment themselves, and be less supportive of costly state-sponsored punishment.

1. THEORETICAL BACKGROUND: ALTRUISTIC PUNISHMENT, DIVINE PUNISHMENT, AND THE EVOLUTION OF COMPLEX SOCIETIES

Though the genetically evolved mechanisms of kin selection and reciprocity can explain cooperation among close

relatives and in very small groups, even human foragers cooperate beyond what these mechanisms can explain [7–9]. Sustaining cooperation becomes even more difficult in larger societies. According to theory, large-scale cooperation may necessitate sanctioning mechanisms in order to emerge in the ephemeral or anonymous social interactions characteristic of modern complex societies [10,11].

Experimental work in Western societies illustrates the effectiveness of costly punishment of norm-violators, at least in terms of increasing cooperation in laboratory games [12–14]. Simply announcing the *threat* of costly punishment in these games raises levels of cooperation [1,15]. Moreover, participants’ willingness to punish in laboratory games predicts national cooperative norms [16], suggesting that results from these laboratory games do, at least to some degree, reflect societal-level factors.

Though administering punishment benefits society as a whole, it has immediate costs for punishers themselves. Not surprisingly, then, in what may be a form of social loafing [17], individuals punish less when others are also able to punish than they do when they alone hold the responsibility for punishment [18]. The belief that *supernatural* agents might aid in the punishment of norm violators, however, offered groups of believers a way that they could abdicate many of their punishment duties, without sacrificing the deterring power of anticipated punishment. Over time, we suggest, cultural evolutionary processes honed religious beliefs into effective tools for ensuring norm compliance. Today, the Gods of the major world religions exhibit ideal qualities for effective punishment [19]: they are omniscient (perfect monitors), morally infallible (often the ultimate source of norms) and infinitely powerful (making punishment for the wicked seem guaranteed).

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Such deities would be especially useful at the margins of human surveillance, where would-be defectors could otherwise cheat with impunity. Moreover, we might expect that even in situations where individuals and societies *could* monitor norm violators and distribute punishment, believing in a powerful God who will take care of things may ease the reliance on altruistic and state punishment. Here, we investigate this as yet untested prediction.

The stability of a cultural system reliant on supernatural punishment faces an obvious cultural evolutionary threat: invasion by free-riders who do not fear supernatural reprisal. History's most successful religions, though, have evolved to protect themselves from this threat. These religions possess highly effective indoctrination practices that exploit cognitive biases [5,20–25], and many of the rituals and devotions involved require adherents to engage in behaviours that non-believers would find too costly to fake [20,23,25–27]. These costly signals can serve to identify non-believers for further indoctrination or for a variety of earthly sanctions [28]. We suggest that enforcing religion alone allowed believers to forego the more difficult task of monitoring and punishing specific moral transgressions. (See the electronic supplementary material for a more extensive discussion.)

2. PRIOR RESEARCH

Some support exists for the role of divine punishment beliefs in norm compliance. Research sampling from societies across the world finds that societal-level beliefs in an omniscient, morally involved 'high God' predict some forms of norm compliance [29], and that beliefs in God, heaven and hell uniquely and negatively predict perceptions of norm violations as unjustifiable [30]. Building on this work, other researchers have found that college undergraduates with more punitive conceptions of God cheated less on an academic task [31].

To the extent that laboratory experiments reflect societal-level tendencies [32], complex societies appear to rely on multiple forms of punishment strategies for ensuring cooperation—altruistic, state-sponsored and divine punishment—concurrently. We propose that there is a compensatory psychological relationship between these forms of punishment: The more people believe in divine punishment, the less they will feel altruistic punishment and state-sponsored punishment are worth investing in. Norm-violators need punishing, but if God is handling it, the individual need not. We focused specifically on beliefs about powerful Gods who can intervene in the world, because belief in God's ability to distribute punishment to norm violators is the one most directly and proximally tied to enhanced cooperation.

This prediction fits with past research showing that beliefs that secular (e.g. governments) and divine (e.g. an interventionist God) entities create order and structure in the world can substitute for people's belief that they themselves create it through personal control [33]. Our hypothesis extends this compensatory control model: The more people believe in powerful, intervening Gods who will impose moral order, the less they will rely on themselves or the state to impose that order via punishment (but see [34]). However, this prediction may also appear somewhat counterintuitive: Religious beliefs, in general, are positively associated with both punishment

[35,36] and prosocial behaviour (e.g. [37,38]) *including* altruistic punishment [13]. In contrast to these findings, we predict that the specific belief in powerful, morally involved Gods should *decrease* altruistic punishment, as well as support for state-sponsored punishment, of norm violators.

3. STUDY 1

In study 1, we examined the associations between God beliefs and altruistic punishment. We measured participants' belief in powerful, intervening Gods, and their general religiosity. We then employed the 3PPG—an economic game commonly used to measure altruistic punishment [39]. In this paradigm, participants can use their own resources to punish another person for violating a cooperative norm; their willingness to do so represents their willingness to altruistically punish norm transgressors. We predicted that participants who believed more strongly in a powerful God would punish less than non-believers. We also included religiosity in our analyses, given evidence of a positive religiosity-punishment association ([13,35,36]; but see [40]).

(a) Method

(i) Participants

Twenty undergraduates participated in exchange for course credit (see the electronic supplementary material, for all samples' demographics).

(ii) Procedure

Participating online, students first completed a demographics form, including the questions: 'It is likely that God, or some other type of spiritual non-human entity, controls the events in the world' (from [33]; rated 1–7 from *strongly disagree* to *strongly agree*) and 'How religious do you consider yourself' (rated 1–5 from *not at all religious* to *very religious*). Weeks prior to the session, participants save one had reported their political orientation (rated on a nine-point scale from 1 [*very liberal*] to 9 [*very conservative*]) during a mass testing session (one participant failed to do so). We included this measure to examine the role of conservatism in any effects of religiosity on punishment [41].

Participants subsequently imagined participating in the 3PPG. The first stage of this game resembles a dictator game [42]: player A receives 20 dollars, and must share that money between herself and player B in two-dollar increments, without input from player B. In the second stage, player C, who has received 10 dollars, can spend some or all of that money to reduce player A's final payout: For every dollar that player C spends, player A loses three dollars. Player A's behaviour does not affect player C, all players are anonymous and expect no further interactions, and punishing player A costs player C money. People treat sharing money evenly between players A and B as the (cooperative) norm [39]; thus, player C's willingness to punish player A for selfishly violating this norm can be taken as an index of altruistic punishment of non-cooperators.

Participants all imagined being player C, and indicated, for each possible way player A could divide the money with player B, how much they would spend to reduce player A's payout. Researchers typically consider the lowest amount player A can offer player B that

Table 1. Regression analyses for study 1 (predicting altruistic punishment).

| predictor | unstandardized coefficient (<i>B</i>) | s.e. | CI (95%) | <i>t</i> ^a | <i>p</i> -value |
|-----------------------|---|------|----------------|-----------------------|-----------------|
| God beliefs | -3.02 | 1.24 | (-5.67, -0.37) | 2.43 | 0.03 |
| religiosity | 5.19 | 2.24 | (0.43, 9.96) | 2.32 | 0.04 |
| political orientation | 0.31 | 1.13 | (-2.11, 2.72) | 0.27 | 0.79 |
| God beliefs | -2.74 | 1.26 | (-5.42, 5.55) | 2.18 | 0.05 |
| religiosity | 2.88 | 2.02 | (-1.42, 7.18) | 1.43 | 0.17 |
| age | 0.35 | 0.26 | (-0.21, 0.91) | 1.34 | 0.20 |
| gender (M = 1, F = 0) | -0.58 | 3.63 | (-8.31, 7.15) | 0.16 | 0.88 |

^aThe degrees of freedom are 15 for the first set of analyses; 15 for the second set.

player C does not punish as the dependent measure. This measure represents, conceptually, the level of generosity that player C demands from player A. Given the current hypothesis, we were less interested in how cooperative player C thought player A should be, and more interested in how much player C was willing to spend to punish player A for being non-cooperative. We sought to isolate altruistic punishment of non-cooperators from various individual difference measures that could contribute to participants' punitiveness (e.g. unilateral aggression). To do so, we calculated the total amount of money participants reported that they would spend punishing player A for making selfish offers (i.e. offers of less than \$10), which we reasoned should reflect altruistic punishment *and* the individual differences, and statistically controlled for participants' punishment of non-selfish offers, which we reasoned should reflect the individual differences (see electronic supplementary material, for a more detailed description, and for all analyses carried out using the traditional 3PPG measure).

All participants completed a suspicion probe before being debriefed. No participant guessed the nature of our hypotheses. This was the case for all studies reported here.

(b) Results and discussion

We expected that participants' belief in a powerful, intervening God would predict decreased punishment of non-cooperators. We also investigated the role of religion in participants' altruistic punishment, given previous evidence of a positive religion-punishment association. We regressed participants' levels of altruistic punishment on their God beliefs and their religiosity (both centred around 0) simultaneously. (For this and all subsequent studies, the accompanying tables present analyses controlling for participants' age and gender.) Participants who believed more strongly in a powerful, intervening God reported less punishment of non-cooperators, $\beta = -0.58$, $t(17) = 2.22$, $p = 0.04$; whereas more religious participants showed a trend towards reporting greater punishment, $\beta = 0.33$, $t(17) = 1.67$, $p = 0.11$ (for all analyses, β , reported in the text, represents the standardized regression coefficient; and *B*, reported in the tables, represents the unstandardized coefficient). Thus, although more religious people tended to believe in powerful, controlling Gods, $r = 0.58$, $p < 0.01$, these two psychological variables show contrasting links to altruistic punishment. (For studies 1–3 we conducted additional analyses including the God beliefs \times religion interaction term [and the condition \times God beliefs \times religiosity term, for studies 2 and 3]. None of the

higher-level interactions reached significance, all β s < 0.31 , all t s < 1.42 , all p s > 0.16 .)

Given the strong correlation between religiosity and conservatism ($r = 0.52$), we conducted an additional analysis including conservatism in the regression. Results are reported in table 1; we found no evidence that conservatism explains the religion–punishment association.

4. STUDY 2

In study 2, we examined this phenomenon in the context of actual behaviour, collecting our data in a laboratory setting. All participants in study 2 actually played the role of player C in the 3PPG described above. This change allowed us to create a situation where participants' punishment decisions influenced their actual financial outcomes. Moreover, we also sought to investigate causality by manipulating the salience of participants' God beliefs. We manipulated whether the God beliefs measure came before (as in study 1) or after the 3PPG. If God beliefs do in fact guide punishment behaviour, this should happen particularly when participants are reminded of these beliefs before the game, making the beliefs especially salient.

(a) Method

(i) Participants

Fifty-five undergraduates participated for course credit.

(ii) Procedure

Individuals participated in groups of up to three, and completed all materials in separate laboratory rooms. If there were fewer than three participants, the experimenter mentioned that the other participant(s) must be late, and the present participant should start. The experimenter next explained the 3PPG, and told participants that they would each be assigned their role—player A, B or C—immediately before the game. Participants did not know each other beforehand, learn each other's names, or speak with each other.

Subsequently, in separate rooms, a computer program randomly assigned participants to a salience condition: Demographics form first (salient condition) or demographics form last (non-salient condition).

The demographics form contained the religiosity measure from study 1, plus three new questions about their beliefs in a powerful God (also modified from [33]): 'God, or some type of supreme being, is in control, at least in part, of the events within our universe,' 'The events that occur in this world unfold according to

God's, or some other supreme being's, plan,' and 'God, or some other supreme being, makes most events in our world happen' (a scale created by averaging these three items showed strong internal consistency, Cronbach's $\alpha = 0.96$). The demographics form also contained the measure of political orientation from study 1.

Participants drew a slip of paper from a bowl containing three folded slips, ostensibly to determine their role. Each slip, however, was marked with the letter C, meaning all participants played the role of the punisher. The experimenter conspicuously sorted through the three instruction sheets labeled 'A', 'B' and 'C', to reinforce the slip-drawing procedure, and handed the participant the sheet labelled 'C' before leaving the room. The experimenter also gave the participant \$10 in change.

The instruction sheet stated that while player A decided how to share the money with player B, they should commit to how much of their own \$10 they would give up to reduce player A's payout, for each potential sharing distribution that player A might select. Participants used a grid where they could indicate how much of their own \$10, in one-dollar increments, they would give up for each of player A's distribution options. We calculated the same index of altruistic punishment of non-cooperators used in study 1.

We determined each participant's final payout by selecting at random one of the distributions that 'player A' could have selected, and determining what that participant would have paid given that distribution. Thus, participants' punishment decisions did influence the amount of money they left the study with, but more importantly they *believed* all along that this would be the case.

(b) Results and discussion

We predicted that beliefs in a powerful, intervening God, when salient, would reduce participants' altruistic punishment of non-cooperators. We once again included participants' religiosity in our analyses, to examine its role in altruistic punishment. We conducted a multiple regression, regressing participants' altruistic punishment scores on condition (0 = not salient, 1 = salient), God beliefs and religiosity (both centred around 0), and the interactions between condition and God beliefs, and between condition and religiosity.

Both interactions emerged as significant predictors. Follow-up analyses on the condition \times God beliefs interaction, $\beta = -0.55$, $t(49) = 2.08$, $p = 0.04$ (see figure 1), showed that when participants' God beliefs were salient, those who saw God as a powerful, intervening entity punished less than those who did not, $\beta = -0.90$, $t(49) = 3.11$, $p < 0.01$; this replicates our findings in study 1, where we also measured God beliefs before the 3PPG. In contrast, when participants' God beliefs were not made salient before the 3PPG, they did not predict punishment, $\beta = -0.12$, $t(49) < 1$, $p = 0.61$.

Follow-up analyses on the condition \times religiosity interaction, $\beta = 0.73$, $t(49) = 2.70$, $p = 0.01$, showed the reverse pattern: When participants' religiosity was salient, more religious participants punished more than less religious participants, $\beta = 0.90$, $t(49) = 3.20$, $p < 0.01$. In contrast, when participants' religiosity was not salient, religiosity did not predict punishment, $\beta = -0.11$, $t(49) < 1$, $p = 0.66$. Including political orientation and the

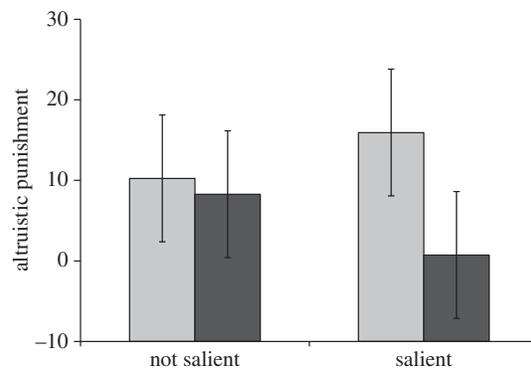


Figure 1. Altruistic punishment of non-cooperators as a function of God beliefs and salience condition (study 2) (filled black box, high God beliefs; filled grey box, low God beliefs).

condition \times political orientation interaction in the regression did not reveal any evidence that conservatism accounted for the religiosity-punishment association (see table 2).

In other words, participants' God beliefs only predicted their level of altruistic punishment when they were salient. This strongly suggests a causal effect of God beliefs on altruistic punishment, and helps rule out the possibility of reverse-causation or third variable explanations. Replicating an earlier study [13], we also found evidence of a causal link between religiosity and altruistic punishment, such that more religious individuals punish more when reminded of religion. Finally, conservatism twice failed to account for the effects of religiosity.

5. STUDY 3

Two studies support a compensatory link between beliefs in powerful, intervening Gods and the tendency to altruistically punish non-cooperators. In study 3, we sought to generalize this effect to a less artificial context: that of a white-collar criminal free-loading off a corporation's profits. Using this scenario also allowed us to extend our findings to people's support for state-sponsored punishment. Just as beliefs in powerful, controlling Gods might alleviate people's own sense of responsibility for punishing wrongdoers, they might reduce people's support for spending citizens' taxes on costly state-sponsored punishment of wrongdoers.

(a) Method

(i) Participants

Seventy-two American residents participated online in exchange for a small sum.

(ii) Procedure

Participants completed two sets of materials—(a) a demographics form containing the religiosity measure and the three-item God beliefs measure (Cronbach's $\alpha = 0.96$) from study 2, but not the conservatism measure, and (b) the task containing the punishment measures. As in study 2, we manipulated the salience of participants' beliefs by counterbalancing the order in which they completed these materials.

Table 2. Regression analyses for study 2 (predicting altruistic punishment).

| predictor | unstandardized coefficient (<i>B</i>) | s.e. | CI (95%) | <i>t</i> ^a | <i>p</i> -value |
|----------------------------------|---|------|----------------|-----------------------|-----------------|
| salience | -1.12 | 2.28 | (-5.37, 3.49) | 0.49 | 0.63 |
| god beliefs | 0.31 | 1.43 | (-2.59, 3.20) | 0.21 | 0.83 |
| religiosity | -2.12 | 1.64 | (-5.43, 1.20) | 1.20 | 0.21 |
| political orientation | -0.78 | 1.15 | (-3.11, 1.56) | 0.67 | 0.51 |
| salience × God beliefs | -4.01 | 2.07 | (-8.30, 0.10) | 1.98 | 0.05 |
| salience × religiosity | 6.66 | 2.28 | (2.04, 11.27) | 2.92 | 0.01 |
| salience × political orientation | 0.75 | 1.48 | (-2.25, 3.75) | 0.51 | 0.62 |
| age | 0.44 | 0.67 | (-0.90, 1.78) | 0.66 | 0.51 |
| gender (M = 1, F = 0) | 0.67 | 2.24 | (-3.84, 5.18) | 0.30 | 0.77 |
| salience | -0.65 | 2.81 | (-5.03, 3.74) | 0.30 | 0.77 |
| God beliefs | -0.61 | 1.24 | (-3.10, 1.88) | 0.50 | 0.62 |
| religiosity | -0.50 | 1.42 | (-3.35, 2.35) | 0.35 | 0.73 |
| salience × God beliefs | -3.93 | 1.96 | (-7.86, -0.01) | 2.01 | 0.05 |
| salience × religiosity | 5.71 | 2.15 | (1.39, 10.02) | 2.66 | 0.01 |

^aThe degrees of freedom are 38 for the first set of analyses; 47 for the second set.

Table 3. Regression analyses for study 3 (predicting endorsements of state-sponsored punishment).

| predictor | unstandardized coefficient (<i>B</i>) | s.e. | CI (95%) | <i>t</i> ^a | <i>p</i> -value |
|------------------------|---|------|----------------|-----------------------|-----------------|
| salience | -0.57 | 0.39 | (-1.35, 0.21) | 1.47 | 0.15 |
| God beliefs | 0.48 | 0.24 | (0.01, 0.96) | 2.02 | 0.05 |
| religiosity | -0.48 | 0.27 | (-1.12, 0.06) | 1.78 | 0.08 |
| salience × God beliefs | -0.96 | 0.32 | (-1.59, -0.33) | 3.03 | <0.01 |
| salience × religiosity | 1.06 | 0.34 | (0.39, 1.74) | 3.16 | <0.01 |
| age | -0.01 | 0.02 | (-0.05, 0.04) | 0.23 | 0.82 |
| gender (M = 1, F = 0) | 0.08 | 0.41 | (-0.74, 0.89) | 0.18 | 0.86 |
| salience | -0.55 | 0.40 | (-1.36, 0.26) | 1.36 | 0.18 |
| God beliefs | 0.50 | 0.25 | (0, 1.00) | 2.01 | 0.05 |
| religiosity | -0.50 | 0.28 | (-1.06, 0.62) | 1.78 | 0.08 |
| salience × God beliefs | -0.99 | 0.34 | (-1.67, -0.31) | 2.89 | 0.01 |
| salience × religiosity | 1.10 | 0.36 | (0.38, 1.81) | 3.06 | <0.01 |

^aThe degrees of freedom are 65 for the first set of analyses; 63 for the second set.

In the punishment scenario, participants read about John, a corporate executive who was stealing from his company to maintain his gambling habit (adapted from [43]). Next, participants used a seven-point scale to indicate how many of their tax dollars they would like to see devoted towards state-sponsored (a) catching and (b) punishing of John ($r = 0.68$). We combined these items into an index of endorsement of state-sponsored punishment.

(b) Results and discussion

We conducted a multiple regression, predicting participants' endorsement of state-sponsored punishment with condition (0 = not salient, 1 = salient), God beliefs and religiosity (both centred around 0), and the interactions between condition and God beliefs, and between condition and religiosity (see table 3).

Consistent with studies 1 and 2, both interactions emerged as significant predictors in this analysis. Follow-up analyses on the condition × God beliefs interaction, $\beta = -0.82$, $t(66) = 2.95$, $p < 0.01$ (see figure 2), showed that when participants' God beliefs were salient, those who saw God as a powerful, intervening entity endorsed state-sponsored punishment less, $\beta = -0.57$, $t(66) = 2.21$, $p = 0.03$. In contrast, when participants' God beliefs were not salient, those who saw God as a powerful,

intervening entity endorsed state-sponsored punishment more, $\beta = 0.60$, $t(66) = 2.00$, $p = 0.05$.

The reverse pattern emerged when we probed the condition × religiosity interaction, $\beta = 0.92$, $t(66) = 3.03$, $p < 0.01$: when participants' religiosity was salient, more religious participants endorsed state-sponsored punishment more strongly than less religious participants, $\beta = 0.65$, $t(66) = 2.71$, $p < 0.01$. In contrast, when participants' religiosity was not salient, more religious participants endorsed state-sponsored punishment marginally less than less religious participants, $\beta = -0.57$, $t(66) = 1.76$, $p = 0.08$.

As predicted, God beliefs predicted decreased support for state-sponsored punishment, but only when these beliefs were salient. Thus, beliefs in a powerful, intervening God who might distribute punishment himself decrease not only people's willingness to invest their own resources, but also their support for the investment of government money in the punishment of wrongdoers. Participants' religiosity plays the opposite role, increasing punishment and support for state-sponsored punishment when salient.

In study 3, an unexpected significant effect emerged: participants in the non-salient condition who believed in a powerful, intervening God supported state punishment more than participants who did not. This pattern differed

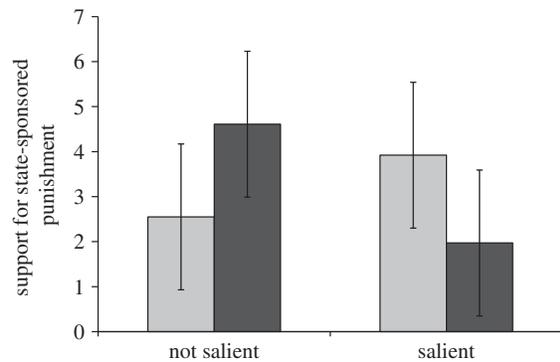


Figure 2. Endorsement of state-sponsored punishment as a function of God beliefs and salience condition (study 3) (filled black box, high God beliefs; filled grey box, low God beliefs).

from the pattern from study 2—and from study 4b—where participants in the non-salient condition show no relation between their beliefs and their degree of punishment. Thus, we have no compelling reason to believe that this reverse effect is reliable; however, it could be a spurious relationship owing to shared variance between religion and conservatism [41], which was not measured here.

6. STUDIES 4A AND 4B

Three studies demonstrate that beliefs in a powerful intervening God reduce people's willingness to invest their own resources in the punishment of norm violators, as well as their support for government spending on such punishment. We suggest this occurred because people view powerful, intervening Gods as responsible for distributing punishment to ensure cooperation, which in turn makes their actions less needed. However, we can think of two other reasonable explanations. First, people who believe in powerful, intervening Gods might believe that punishment—at least immediate, earthly punishment—is a less appropriate response to misdeeds. Second, people who believe in powerful, intervening Gods might believe that individuals are less responsible for their misdeeds, because God is at least partially in control of these actions, too. In other words, participants who believe in powerful, intervening Gods might have lower free will beliefs.

In studies 4a and 4b, we evaluated the plausibility of these three proposed mechanisms. In study 4a, we examined the correlations between God beliefs and each of the relevant variables—attributions to God of responsibility for distributing punishment, perceived appropriateness of punishment, and endorsement of free will. In study 4b, we tested for a causal link between any of the three variables and altruistic punishment. Taken together, these results clarify which of the three possible mechanisms—the hypothesized one or the two alternatives—can plausibly account for our results.

(a) Method

(i) Participants

Twenty-five (study 4a) and 76 (study 4b) American residents participated online in exchange for a small sum.

(ii) Procedure

In both studies, participants completed a nine-item questionnaire, using a seven-point scale (1 = *not at all*, 7 = *extremely*), to tap our three potential mechanism variables (see the appendix). The resulting three-item scales—particularly, the one assessing attributions to God—showed somewhat low internal consistency. We therefore conducted all analyses using scale items individually. Results of these analyses supported our predictions, and can be found in the electronic supplementary material. It should be noted, however, that our prediction—that we would find significant effects only on the scale that showed the lowest internal consistency—made for an increased chance of type II error, not type I error.

In study 4a, prior to the mechanism questionnaire, participants completed the demographics questionnaire, which included the measure of God beliefs described in study 2. In study 4b, participants played the hypothetical 3PPG (again in the role of player C) from study 1. They did this either after they completed the potential mechanisms questionnaire (salient condition), or beforehand (non-salient condition).

(b) Results

(i) Study 4a

To evaluate the plausibility of the three different variables in explaining the link between God beliefs and altruistic punishment—attribution to God of responsibility for distributing punishment, perceived appropriateness of punishment, and endorsement of free will—we first examined their relationship with participants' God beliefs. We regressed participants' God beliefs on the three variables, all centred around 0. This analysis allowed us to examine the interrelations of God beliefs with each psychological variable controlling for the others, but simply examining the correlations produced the same results. As predicted, participants' attributions to God were strongly and positively related to their God beliefs, $\beta = 0.50$, $t(112) = 5.45$, $p < 0.001$. Unexpectedly, participants who believed more strongly in a powerful, intervening God also viewed punishment as more appropriate, $\beta = 0.19$, $t(112) = 2.26$, $p = 0.03$, making the perceived appropriateness of punishment alternative explanation even more untenable. Finally, participants' God beliefs bore no relation to their beliefs in free will, $\beta = -0.07$, $t(112) < 1$, $p = 0.42$.

These results support our interpretation of the link between God beliefs and altruistic punishment: Individuals who believe more strongly in a powerful, intervening God do view that God as more responsible for punishing wrongdoers. These results also fail to support alternative explanations which predict that God beliefs relate to lower beliefs in free will or the appropriateness of punishment.

(ii) Study 4b

We predicted that, when salient, participants' attributions of responsibility for distributing punishment to God—but neither of the other variables—would predict participants' punishment behaviour. We tested this prediction with a regression analysis, using condition (not salient = 0, salient = 1), the three psychological variables (perceptions of human responsibility for distributing punishment, perceptions of the appropriateness of punishment, or

Table 4. Regression analyses for study 4b (predicting altruistic punishment).

| predictor | unstandardized coefficient (<i>B</i>) | s.e. | CI (95%) | <i>t</i> ^a | <i>p</i> -value |
|-------------------------|---|------|----------------|-----------------------|-----------------|
| salience | -0.84 | 0.72 | (-2.28, 0.64) | 1.16 | 0.25 |
| attributions to God | 0.54 | 0.33 | (-0.12, 1.21) | 1.63 | 0.11 |
| appropriateness | 0.50 | 0.51 | (-0.53, 1.52) | 0.97 | 0.34 |
| free will | -0.43 | 0.51 | (-1.44, 0.59) | 0.84 | 0.41 |
| salience × attributions | -1.56 | 0.50 | (-2.56, -0.56) | 3.12 | <0.01 |
| salience × appropri. | -0.21 | 0.65 | (-1.50, 1.08) | 0.32 | 0.75 |
| salience × freewill | -0.57 | 0.78 | (-2.11, 0.98) | 0.73 | 0.47 |
| age | -0.05 | 0.04 | (-0.12, 0.02) | 1.34 | 0.19 |
| gender (M = 1, F = 0) | -0.80 | 0.75 | (-2.30, 0.70) | 1.06 | 0.29 |
| salience | -0.95 | 0.73 | (-2.41, 0.51) | 1.30 | 0.20 |
| attributions to God | 0.55 | 0.33 | (-0.12, 1.21) | 1.65 | 0.10 |
| appropriateness | 0.67 | 0.53 | (-0.38, 1.72) | 1.27 | 0.21 |
| free will | -0.44 | 0.51 | (-1.45, 0.58) | 0.86 | 0.39 |
| salience × attributions | -1.52 | 0.50 | (-2.52, -0.52) | 3.02 | <0.01 |
| salience × appropri. | -0.32 | 0.66 | (-1.64, 1.01) | 0.48 | 0.64 |
| salience × free will | -0.52 | 0.78 | (-2.07, 1.03) | 0.67 | 0.51 |

^aThe degrees of freedom are 68 for the first set of analyses; 66 for the second set.

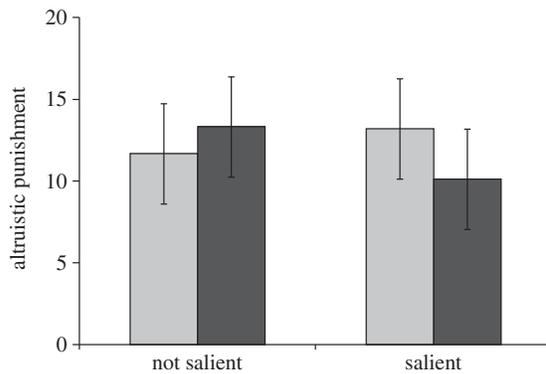


Figure 3. Altruistic punishment of non-cooperators as a function of attributions of responsibility to God and salience condition (study 4b) (filled black box, high God beliefs; filled grey box, low God beliefs).

endorsement of free will, centred around 0), and the three interactions between condition and psychological variable to predict participants' altruistic punishment scores (see table 4).

The only significant effect was the interaction between condition and attributions of responsibility, $\beta = -0.48$, $t(68) = 3.12$, $p < 0.01$ (see figure 3). When participants' perceptions were salient, those who attributed more responsibility for punishing wrongdoers to God punished less than those who attributed less responsibility to God, $\beta = -0.48$, $t(68) = 2.72$, $p = 0.01$. When participants' perceptions were not salient, however, this relationship was eliminated, $\beta = 0.54$, $t(68) = 1.63$, $p = 0.11$.

These results are consistent with the possibility that attributing responsibility to God for punishing wrongdoers decreases people's willingness to expend their own resources punishing wrongdoers themselves.

Thus, of the three potential mediating variables we examined, only attributions of responsibility was associated with both God beliefs and punishment behaviour. This offers support for our contention that the reason those who believe in a powerful, intervening God are

less inclined to punish wrongdoers is that they feel they can leave this responsibility to God.

7. GENERAL DISCUSSION

Five studies showed consistent and convergent evidence that beliefs in divine punishment diminish the motivation for earthly forms of costly punishment. In spite of a tendency for religious people in general to punish more, those with the specific belief in powerful and involved Gods showed less willingness to engage in altruistic punishment. Moreover, mirroring the general pattern in religious priming experiments, the effects of participants' beliefs were only found when these beliefs were made salient. This finding strongly suggests that participants' beliefs about God and their religiosity causally impact the punishment of norm violators. Finally, the link between God beliefs and punishment is plausibly explained by attributions of responsibility for punishing wrongdoers, but not by beliefs about the appropriateness of punishment or about free will.

(a) Theoretical implications

By demonstrating that people perceive a psychological trade-off between earthly and divine punishment options, the current findings support theories suggesting that beliefs in punishing supernatural agents emerged, in part, because they offered societies a way to avoid some of the costs associated with earthly punishment. Though individuals may have reduced the degree to which they engaged in the costly punishment of norm violators, deterrence levels may have been maintained by the additional threat of divine punishment. The threat of punishment from powerful, omniscient and intervening Gods can be even more effective at deterring counter-normative behaviour than the threat of punishment from one's peers [19,31,37,38]. Moreover, our findings fit well with historical records indicating that powerful, intervening 'high Gods' were most likely to emerge in large societies, or those with resources shortages, both of which have particularly high needs for regulating and enforcing cooperation [44,45].

Our findings build on the small body of relevant research by highlighting the importance of a specific religious belief—belief in powerful, intervening Gods. The two earlier studies that touch on this topic produced mixed results. One found that religiosity, at least for the highly devoted who contributed financially to their church, is associated with higher levels of punishment—an effect that was broadly replicated here [13]. However, the second paper, covering 15 disparate populations, found no effect of religion on levels of altruistic punishment [40]. These latter null may be explained by the fact that the authors did not make religion salient. However, more generally, null effects of religion on punishment may be explained by the opposing effects of general religiosity, which appears to increase punitiveness, and the specific belief in powerful, intervening Gods, which appears to reduce it. These two variables probably cancel each other out in analyses employing only religiosity as a predictor. In attempting to delineate the psychological consequences of specific religious beliefs, this paper joins recent efforts to study ‘religion’ not as a monolithic whole, but as a set of interlocking, and interacting, elements [31,32,46,47].

Our findings also contribute to understanding how religious primes function. Some have suggested that religious primes remind participants that ‘God is watching and wants you to behave’ [38]; others have claimed that they merely activate ideomotor associations with general prosociality [37]. Here, we show that people who believe God is a punisher actually punish norm violators less (not more) when primed with religion. This runs directly counter to what would be expected under the ideomotor account.

(b) *Limitations and future directions*

One advantage of studying particular religious beliefs is that it can inform knowledge about differences between religions. It is reasonable to expect that religions will differ, for instance, in the degree to which they emphasize belief in powerful, punishing Gods. Therefore, we can make predictions about how different religions will inspire punitive attitudes and behaviours among their adherents. Unfortunately, given the size and diversity of our samples, we could not investigate these differences empirically. Narrow sampling is a common limitation in much of psychology [48], and future research should make efforts to reach more globally representative populations.

Another common limitation in psychology is vulnerability to demand characteristics, particularly when participants’ behaviour has no bearing on their future outcomes. We did use a monetized version of the 3PPG in study 2 in order to add real financial stakes to participants’ decisions. However, because the money in that study incentivized participants to avoid punishing, and because low punishment was what we predicted in our critical condition, this procedure did not adequately address the issue of demand characteristics.

However, there are at least two other reasons why we think the results are not owing to demand effects. First, in all studies, suspicion probes indicated that no participants guessed the nature of our hypotheses. Participants cannot be susceptible to demand characteristics if they do not know the hypothesis. This gives us some degree of confidence that demand characteristics cannot completely explain our results.

Second, if demand characteristics were truly responsible for our results, then we should have found at least one other instance of their influence in study 4b. In this study, participants may have felt uncomfortable punishing a peer when they had just agreed that it was ‘ok to let a bad deed go unpunished because there are forces outside of us that will ensure that wrongdoers are punished in the end.’ However, given this line of reasoning, they also should have punished more after agreeing that ‘bad deeds deserve to be punished’; an effect which did not emerge. Therefore, the fact that the appropriateness measure, even when salient, did not predict punishment suggests that demand characteristics may not account for our results. If participants were motivated solely by experimenter demand, and not by the hypothesized mechanism of divine punishment, then it is not clear why participants would have attempted to make their punishment behaviour correspond with their response to one punitive statement but not the other. Thus, we find it unlikely that our pattern of results can be fully explained by demand characteristics.

In our research, we found it necessary to remind participants of their beliefs for these beliefs to influence their decisions. This may seem to suggest that these effects may not have much importance in the real world; however, the real world, we submit, is replete with reminders of religions and Gods. Cultural evolutionary theorists have argued that practices have emerged to increase the frequency of religious primes in order to, in turn, increase prosociality [5]. Ancient states built religious monuments on the market square. Latin American towns place massive crosses high above the community, visible to all. Many religions require or encourage adherents to don religious symbols, like crosses or headwear. Islamic communities loudly announce the call to prayer five times per day, and other faiths require prayers before consuming food. These frequent reminders occur even in everyday language. The word ‘God’, for instance, is one of the most frequently used nouns in written English text [49].

Recent studies have demonstrated the effects of these naturally occurring primes in everyday life [50–53]. Moreover, these types of reminder may be especially common in courtrooms, where punishments for norm-violators are often determined. For instance, courtrooms often display religious symbols and witnesses often swear before their God that they will testify truthfully. Thus, we suspect that reminders of religion and God beliefs are frequent enough, particularly in the contexts that surround punishment decisions, that they probably have important impacts on real-world punishments.

Finally, future research may focus on what aspects of religion account for its tendency to increase punitiveness. The current findings support direct theory-driven predictions for what beliefs *decrease* the willingness to punish, but the specific explanations for the converse effect are less clear. One candidate is that altruistic punishment operates like other prosocial behaviours [13], and religion motivates people to perform it [4]. Another possibility is that reminders of religions’ explicit moral codes believers’ outrage in the face of violations. Yet another possibility is that there are specific beliefs that elicit increased willingness for punishment. Whatever the explanation, this research promises to shed further light on the complex ways in which religious beliefs have shaped, and continue to shape the moral order of human societies.

APPENDIX. ITEMS USED TO MEASURE VARIABLES USED IN STUDIES 4A AND 4B.

| | Cronbach's | |
|---|---------------|---------------|
| | α (4a) | α (4b) |
| <i>Attribution to god of responsibility for distributing punishment</i> | 0.58 | 0.58 |
| ‘If we human beings don’t enforce a moral order on each other, no one will’ (R). | | |
| ‘It is ok to let a bad deed go unpunished because there are forces outside of us that will ensure that wrongdoers are punished in the end’. | | |
| ‘Punishing people’s moral failings is up to our maker, not other human beings’. | | |
| <i>Perceived appropriateness of punishment</i> | 0.85 | 0.92 |
| ‘Bad deeds deserve to be punished’. | | |
| ‘When someone does something wrong, they should suffer some sort of consequence’. | | |
| ‘There should most of the time be a punishment when someone does something wrong’. | | |
| <i>Endorsement of free will</i> | 0.66 | 0.72 |
| ‘Regardless of what external forces are at play, people are ultimately responsible for their own behaviour’. | | |
| ‘No matter what people think, our actions are ultimately the product of forces outside ourselves’ (R). | | |
| ‘Even though it often feels like I am choosing how to behave, what I do is caused by forces beyond my control’ (R). | | |

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