*Supplementary Material***

Moralizing gods, impartiality, and religious parochialism across 15 societies

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1. Introduction

In these Supplementary materials, section 2.1 first details the construction of our main predictor and control variables (detailed protocols can be found at our Open Science Framework project: https://osf.io/epkbw/). In section 2.2, we provide descriptions of each site detailing the specific context of the study, recruitment strategies, and procedures for selecting moralizing and local gods, distant co-religionists, and outgroups. Finally, section 3 extends results presented in the main text and details the testing of alternative explanations/models.
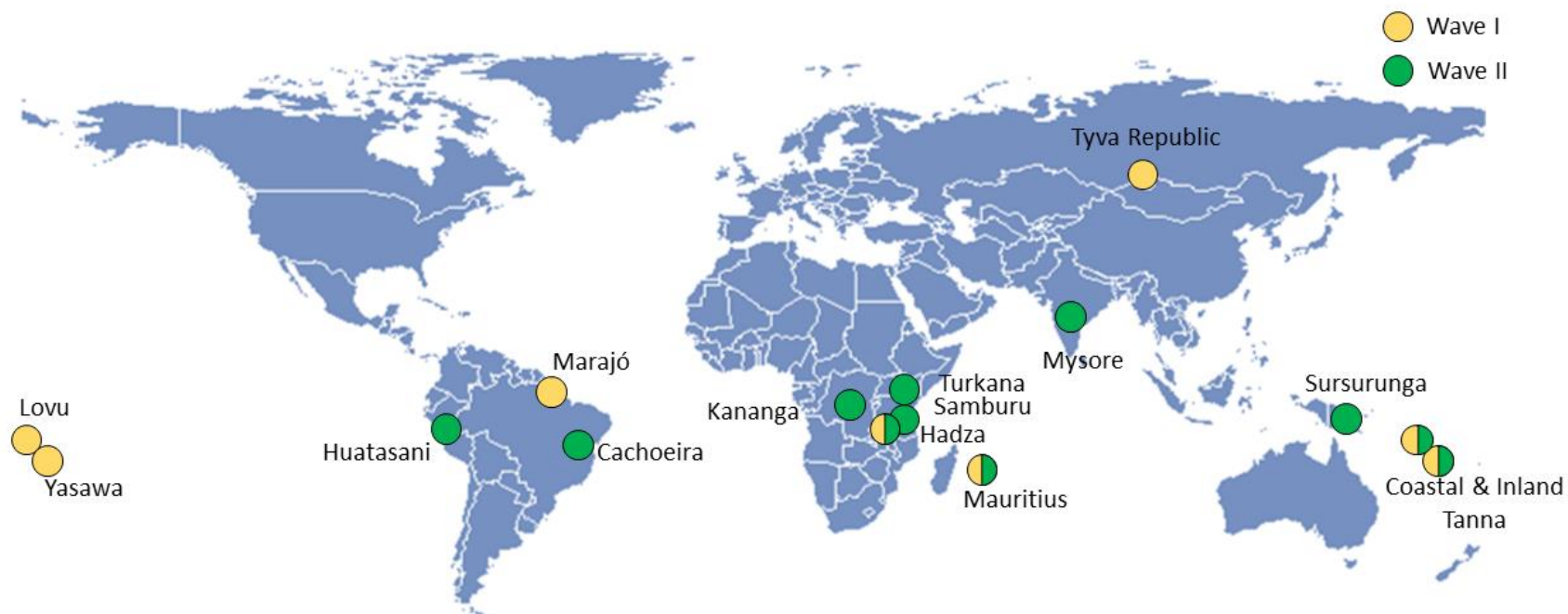
Fig. S1. Map Displaying the Location of Wave I and II Sites.

2. Supplementary Methods

2.1. Interviews

2.1.1. Demography and Material Insecurity Surveys

To control for baseline differences between our participants and sites, we collected data on participants' age, sex, years of formal education, household size, number of children, and material insecurity (age, education, and material insecurity were centered at their grand means). All of these variables have at least occasionally been shown to influence the decision-making process in economic games [1–3]; thus we hold their effects constant. For sites taking part in both waves, we used participants' age during the first wave of data collection in the analysis of the DISTANT RAGs, and their age during the second wave collection for all remaining analyses. As there were some discrepancies in the age-records of the Hadza participants between waves, we used age during the first wave collection as the basis and added two years to these records for the second wave collection (rather than relying on participants' records from the second wave, which often varied by several years).

We assessed material insecurity [4,5] by asking participants the following question:

- *Do you worry that in the next _____ your household will have a time when it is not able to buy or produce enough food to eat?*

The blank space was filled with four variants: month, six months, year, and five years. Each question was answered by either yes or no, and an average of these four questions was used as the indicator of material insecurity in our models. Note that the Hadza do not keep track of time in this fashion and were asked only about next month and next year in Wave I, and only about next month in Wave II. See Tab. S1 for site-specific means of demographic variables.

Tab. S1. Means (SD) of Demographic Variables Used as Simple Effects

Site	N	Females	Age	Household Size	Children	Education	Material insecurity
Cachoeira	274	179	34.19 (12.87)	4.23 (2.13)	1.81 (1.92)	8.58 (4.02)	0.86 (0.29)
Coastal Tanna	178	90	35.14 (14.33)	6.26 (2.75)	2.62 (2.06)	7.76 (4.22)	0.28 (0.36)
Hadza	201	100	38.82 (13.72)	4.12 (2.17)	3.61 (2.58)	1.72 (2.99)	0.46 (0.49)
Huatasani	94	57	38.51 (15.92)	4.12 (2.25)	2.47 (2.04)	8.96 (3.80)	0.79 (0.30)
Inland Tanna	112	55	36.25 (15.40)	6.05 (2.58)	3.39 (3.35)	0.68 (2.04)	0.28 (0.38)
Kananga	200	121	38.09 (14.46)	7.75 (3.92)	4.49 (2.98)	9.51 (3.32)	0.84 (0.34)
Lovu	76	52	44.56 (16.94)	3.67 (1.98)	2.24 (1.59)	8.77 (3.78)	0.83 (0.33)
Marajó	77	40	34.12 (13.08)	4.94 (2.09)	2.18 (2.56)	8.00 (3.53)	0.86 (0.24)
Mauritius	245	99	36.93 (15.80)	4.27 (2.17)	1.34 (1.72)	8.84 (3.57)	0.36 (0.38)
Mysore	165	71	33.56 (12.34)	4.46 (1.71)	0.91 (1.10)	13.35 (5.42)	0.10 (0.28)
Samburu	40	28	51.27 (12.48)	9.05 (4.09)	8.43 (4.13)	0.70 (1.76)	0.64 (0.42)
Sursurunga	163	90	37.60 (14.13)	5.76 (2.42)	3.01 (2.49)	7.51 (2.63)	0.57 (0.40)
Turkana	247	145	38.03 (16.38)	8.50 (5.11)	3.96 (3.85)	0.48 (1.23)	0.20 (0.29)
Tyva Republic	81	58	33.53 (12.52)	4.25 (1.83)	1.70 (1.43)	15.44 (2.29)	0.47 (0.28)
Yasawa	75	41	38.04 (15.91)	8.34 (4.54)	2.00 (2.07)	9.66 (2.42)	0.50 (0.40)
Grand M/Total	2,228	1,226	36.98 (14.79)	5.61 (3.42)	2.74 (2.83)	7.15 (5.39)	0.51 (0.44)

2.1.2. Religiosity Surveys

At each site, we interviewed approximately 20 participants before running the experiments, asking them to list and rank the five most important gods and spirits in their area. Participants then determined whether these gods/spirits are concerned with normative behavior, can see into people's minds, punish people for non-normative behavior, and reward people for normative behavior (see below for specific questions). From these ratings, researchers at each site selected one god/spirit that was, on average, more concerned with interpersonal norms, monitoring, and punitive compared to other gods (here labeled 'moralizing god') and one god/spirit less concerned with the normative aspects of human relationships, often recognized in a specific place of residence (here labeled 'local god'). The moralizing deities were used when defining both the LOCAL and DISTANT co-religionists (having commitment to the same supernatural agents) and OUTGROUPs (having commitment to different supernatural agents). See section S2.2 for detailed descriptions of selection of moralizing and local gods at each site.

In our post-experimental surveys, we interviewed participants about various facets of their religious cognition and behavior (see the full data set from Wave I for additional questions [6] and also the protocols published at: https://osf.io/epkbw/). Whereas our surveys also included scale questions that pertained other aspects of religious beliefs, the main predictor variables were binary in order to assure comparability between sites and inclusion of all of our sites (e.g., the Hadza do not count, hence do not use scales [7,8]). In the present analyses, we focused on the most crucial aspects of belief in moralizing and local gods: their punishment and monitoring abilities. As some ethnographic accounts suggest that people may believe in punitive but ignorant deities (or vice versa [9]), we asked two sets of punishment and monitoring questions, using binary (yes/no) items for each god:

- *P-M1: Does [moralizing/local god] ever punish people for their behavior?*
- *P-M2: Can [moralizing/local god] influence what happens to people after they die?*
- *P-M3: Can [moralizing/local god] see into people's hearts or know their thoughts and feelings?*
- *P-M4: Can [moralizing/local god] see what people are doing if they are far away, in… [distant town or city familiar to participants]*

We planned to assess the effects of punishment (P-M1 & P-M2) and monitoring (P-M3 & P-M4) independently, but also to aggregate the answers to P-M questions for each god (moralizing and local), creating a composite punishment-monitoring score ranging from zero to one as done elsewhere [1,10]. On this scale, maximum values represent prototypically punitive and monitoring deities. The combination of punishment and monitoring factors is central in the constellation of beliefs about gods predicted to amplify normative conduct [11,12]: if gods are thought to be ignorant of human behavior, their punishment possibilities would be limited; if they could know about norm deviations but could not punish such deviations, belief in gods would have only a limited impact on human behavior. In other words, the more individuals' beliefs approximate to the theoretical ideal of an all-knowing, punitive deity, the more likely they should exercise limited self-favoritism and increased sharing.

However, while the strategy of isolating monitoring and punishment worked for Wave I analyses [1,10], these factors' distributions showed ceiling effects and low variation in the Wave II dataset. The two variables specified above as P-M3 and P-M4 had very little variation for moralizing gods (M_{P-M3} = 0.95, SD = 0.21; M_{P-M4} = 0.95, SD = 0.21) and some sites showed no variation at all (see Fig. S2 for density plots), precluding us from examining the independent monitoring and punishment effects. Thus, collapsing all four

questions into one punishment-monitoring score had the benefit of having higher variability of our main predictor, aside their theoretical importance.

In the interest of construct validity, we used factor analysis with oblique rotation ("oblimin") to assess whether the selected characteristics of punishment-monitoring loaded separately on factors related to specific gods. Bartlett's test of sphericity indicated that all items were sufficiently inter-correlated (χ^2 (28) = 4135.97, p < .001) and the Kaiser-Meyer-Olkin (KMO) test revealed sampling adequacy (MSA = .63). The number of factors was set to two because we expected to find one moralizing and one local god factor (see Tab. S2 for factor loadings and eigenvalues). Both factors had adequate Cronbach's α (moralizing god = .60, local god = .73).

Furthermore, as an additional check that the chosen moralizing and local gods were sufficiently different at each site, we constructed a more specific variable pertaining the belief in gods' interest with punishing specific norm-transgressions related to interpersonal conduct (normative index). This step was motivated by theories predicting that deities concerned with policing group norms contribute to wider cooperation and are associated with greater social complexity and resource scarcity/unpredictability [13–15]. Thus, we assessed the extent to which moralizing and local deities are concerned with interpersonal conduct by constructing a normative index from three questions:

- *NI1: How important is punishing thieves to [moralizing/local god]?*
- *NI2: How important is punishing liars to [moralizing/local god]?*
- *NI3: How important is punishing murderers to [moralizing/local god]?*

These questions were answered on a five-point scale with the following options: (0) not important at all; (1) a little important; (2) important; (3) very important; (4) the most important thing. Similar to the punishment-monitoring variable, this scale exhibited good inter-correlation as assessed by Bartlett's test of sphericity, (χ^2 (15) = 8454.77, p < .001) and sampling adequacy assessed by KMO (MSA = .76). A two-factor solution revealed high loadings on the moralizing and local god factors with Cronbach's alpha 0.87 for the former factor and 0.92 for the latter one (see Tab. S2). We created the normative index by averaging across the three NI questions for each type of god.

Finally, we considered a complementary hypothesis in which participants' behavior in economic games might be motivated by belief in moralizing and local gods who are rewarding [16]. While it's a common intuition that rewards should be as effective as punishment, both evolutionary theory and features of human psychology such as how people weigh losses vs. gains suggest that costly punishment should be relatively more important than rewards [17]. Thus, we asked:

- *How often does [moralizing/local god] assist people in their lives or reward them for proper behavior?*

At most sites, participants answered this question on a four-point scale: (0) never; (1) sometimes; (2) frequently; (3) all the time. However, Cachoeira, Sursurunga, Marajó, and Tyva Republic participants used the following scale: 0) Very rarely/never; (1) A few times per year; (2) A few times per month; (3) A few times per week; and (4) Every day or multiple times per day. Consistent with the method we employed elsewhere [1,10], we normalized these discrepancies by dividing the values at each site by the maximum possible score for each site, hence the resulting scale ranged from zero to one. Note that in most of our analyses, we used site fixed effects, which will absorb any average between-site differences created by the scales.

Tab. S2. Factor loadings of moralizing and local god punishment-monitoring and normative index beliefs.

Variable	Punishment-Monitoring (1)	Punishment-Monitoring (2)	Variable	Normative Index (1)	Normative Index (2)
MG: P-M1		.51	MG: NI1		.91
MG: P-M2		.45	MG: NI2		.88
MG: P-M3		.85	MG: NI3		.88
MG: P-M4		.85	LG: NI1	.93	
LG: P-M1	.62		LG: NI2	.93	
LG: P-M2	.66		LG: NI3	.91	
LG: P-M3	.83				
LG: P-M4	.84				
Eigenvalue	2.24	1.92		2.57	2.38
Cronbach's α	.73	.60		.92	.87

Note. MG = Moralizing God; LG = Local God; P-M = Punishment-Monitoring question number; NI = Normative Index question number.

Tab. S3. Average Scores with SD of Moralizing and Local God Attributes

Site	MG Punishment-Monitoring [0-1]	LG Punishment-Monitoring [0-1]	MG Normative Index [0-4]	LG Normative Index [0-4]	MG Reward [0-1]	LG Reward [0-1]
Cachoeira	0.78 (0.17)	0.43 (0.34)	1.90 (1.27)	1.46 (1.11)	0.92 (0.17)	0.56 (0.42)
Coastal Tanna	0.86 (0.17)	0.46 (0.31)	2.65 (1.26)	2.05 (1.19)	0.83 (0.27)	0.47 (0.34)
Hadza	0.75 (0.36)	0.66 (0.38)		---	---	---
Huatasani	0.83 (0.21)	0.45 (0.33)	1.84 (1.45)	1.03 (1.27)	0.67 (0.36)	0.43 (0.37)
Inland Tanna	0.81 (0.27)	0.75 (0.29)	2.66 (1.31)	2.45 (1.33)	0.85 (0.27)	0.88 (0.27)
Kananga	0.89 (0.19)	0.18 (0.27)	2.27 (1.20)	0.70 (0.99)	0.84 (0.21)	0.15 (0.24)
Lovu	0.91 (0.15)	---	3.13 (0.77)	---	0.75 (0.26)	---
Marajó	0.88 (0.20)	0.67 (0.38)	2.40 (1.09)	2.05 (1.13)	0.95 (0.19)	0.72 (0.39)
Mauritius	0.77 (0.24)	0.47 (0.36)	2.01 (1.01)	1.00 (1.10)	0.83 (0.26)	0.26 (0.35)
Mysore	0.77 (0.31)	0.80 (0.30)	2.13 (1.02)	2.18 (1.02)	0.71 (0.35)	0.75 (0.33)
Samburu	0.92 (0.12)	---	2.58 (1.02)	---	0.91 (0.17)	---
Sursurunga	1.00 (0.03)	0.42 (0.24)	1.87 (0.51)	0.26 (0.51)	0.75 (0.29)	0.17 (0.18)
Turkana	1.00 (0.03)	0.21 (0.30)	2.70 (0.63)	0.69 (0.96)	0.72 (0.25)	0.16 (0.19)
Tyva Republic	0.79 (0.27)	0.76 (0.26)	2.66 (1.13)	2.57 (1.12)	0.73 (0.37)	0.60 (0.38)
Yasawa	0.77 (0.07)	0.24 (0.05)	3.78 (0.56)	0.32 (0.13)	0.97 (0.12)	0.00 (0.04)
Grand M	0.85 (0.23)	0.45 (0.37)	2.36 (1.14)	1.26 (1.26)	0.81 (0.27)	0.38 (0.39)

Note. MG = Moralizing God; LG = Local God.
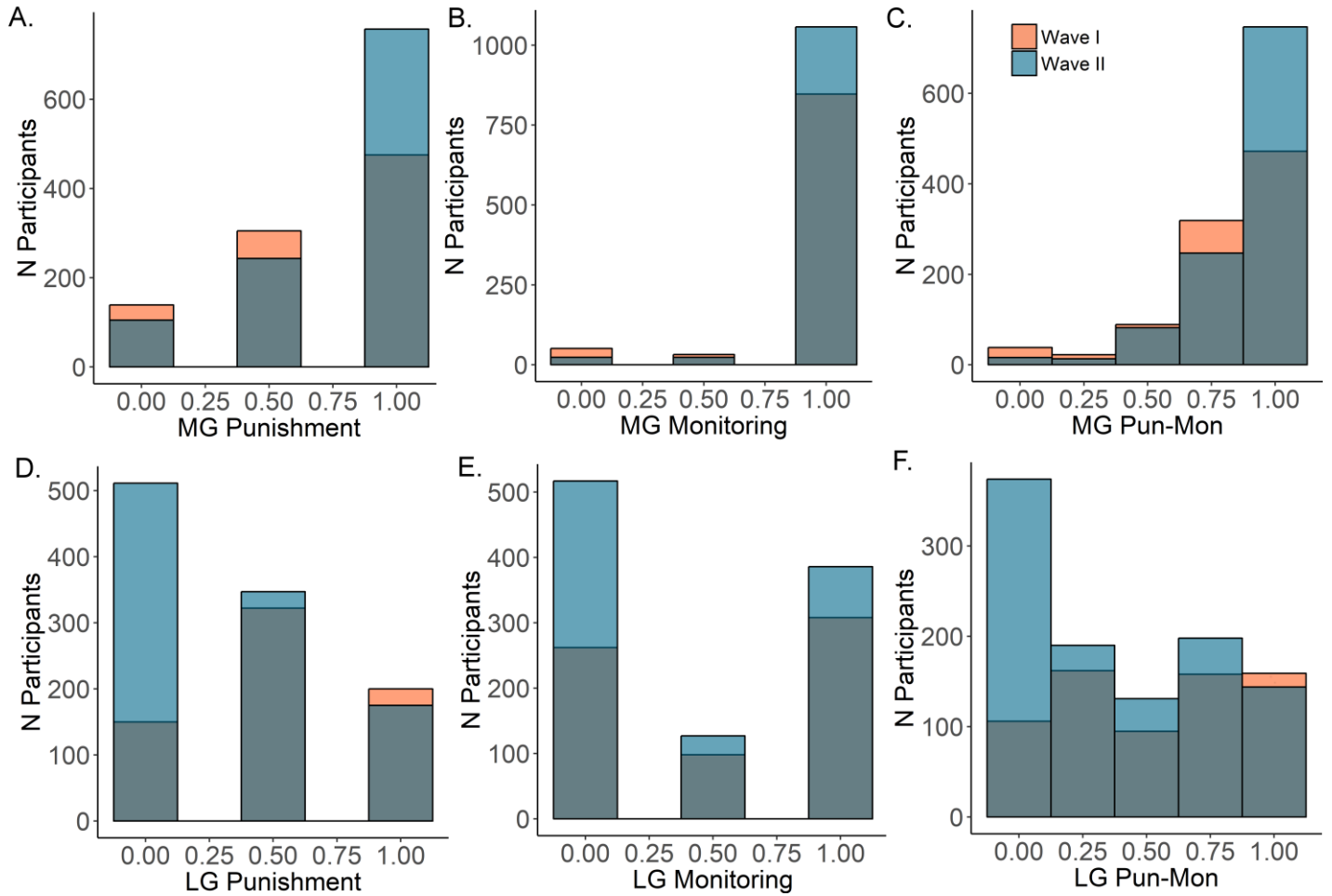
Fig. S2. Histograms of Ratings of Moralizing and Local Gods' Punishment and Monitoring. A.-C. Since there is almost no variation in the ratings of moralizing god's monitoring in Wave II (B.), we had to collapse MG Punishment and Monitoring ratings to create the variable MG Pun-Mon (C.). **D.-F.** The ratings of punishment and omniscience abilities of local god exhibit more inter-individual variation.

2.1.3. Distant and Outgroup Relationship and Police Evaluation

In order to control for between-site differences in the definitions of DISTANT co-religionists and OUTGROUPs (see section 2.2), we asked each participant how close they felt toward LOCAL and DISTANT co-religionists and toward OUTGROUPs, using the Inclusion of Other in Self Scale [18]. We used five points of overlap, starting with the self-circle touching the local/distant/outgroup circle and ending with the self-circle inside the group circle. Furthermore, we also assessed how similar the local religious tradition was believed to be to the traditions of DISTANT co-religionists and OUTGROUPs. Participants answered on a five-point scale from -2 ("very different") to 2 ("very similar"). To control for the possible effects of relationships to local secular authorities on the game behavior, we asked participants to evaluate the members of local police (or similar institution) on a five-point scale from -2 ("extremely bad") to 2 ("extremely good"). Site-specific means are displayed in Tab. S4.

Tab. S4. Mean Scores with SD of Relationship to Local and Distant Co-Religionists and to Outgroup

Site	LOCAL closeness [1-5]	DISTANT closeness [1-5]	DISTANT similarity [-2-2]	OUTGROUP closeness [1-5]	OUTGROUP similarity [-2-2]	Police evaluation [-2-2]
Cachoeira	2.60 (1.62)	1.47 (1.01)	-0.18 (1.11)	1.64 (1.12)	---	0.30 (1.05)
Coastal Tanna	4.25 (1.19)	4.01 (1.38)	1.05 (0.97)	2.74 (1.72)	0.55 (1.29)	0.30 (1.04)
Hadza	4.76 (0.65)	4.13 (1.05)	---	1.78 (1.27)	---	---
Huatasani	3.89 (1.35)	2.72 (1.40)	-0.05 (1.43)	2.16 (1.30)	-0.95 (1.04)	-0.47 (1.12)
Inland Tanna	4.43 (1.06)	4.20 (1.30)	1.16 (1.13)	2.47 (1.82)	-0.44 (1.01)	0.47 (1.13)
Kananga	3.60 (1.10)	3.08 (1.43)	0.76 (0.92)	3.37 (1.35)	-0.14 (1.19)	-0.18 (1.28)
Lovu	3.53 (1.47)	3.40 (1.55)	-0.08 (1.09)	---	---	0.66 (0.76)
Marajó	3.96 (1.42)	2.60 (1.64)	0.31 (1.23)	---	---	-0.04 (0.98)
Mauritius	4.18 (1.20)	3.27 (1.53)	0.74 (0.92)	2.30 (1.52)	-0.84 (1.25)	0.39 (0.96)
Mysore	3.33 (1.58)	3.04 (1.55)	0.22 (1.06)	3.05 (1.50)	0.11 (1.15)	0.18 (0.81)
Samburu	4.75 (0.59)	4.65 (0.89)	0.42 (1.43)	3.33 (1.75)	0.33 (1.13)	-0.44 (1.10)
Sursurunga	3.63 (1.21)	3.87 (1.03)	-0.71 (1.2)	3.44 (1.30)	0.90 (0.94)	0.13 (1.35)
Turkana	3.72 (1.01)	2.70 (1.22)	1.53 (0.81)	1.38 (0.66)	-0.68 (1.37)	-0.63 (1.06)
Tyva Republic	3.76 (1.46)	2.99 (1.70)	1.18 (0.66)	---	---	0.41 (0.63)
Yasawa	1.99 (0.26)	3.88 (0.55)	-1.7 (0.84)	---	---	0.03 (0.16)
Grand M	3.69 (1.39)	3.16 (1.53)	0.45 (1.29)	2.41 (1.54)	-0.12 (1.35)	0.07 (1.10)

2.1.4. Game Checks

To assess whether participants guessed the purpose of our study, we asked what they thought the study was about immediately following the RAGs and DGs. While none of our participants precisely guessed the intention, we coded all answers containing the words "honesty", "cheating", or "fairness" and created a variable 'Mentioned honesty' that was used in some of our models. Note that for sites taking part in both waves, we created one honesty variable for the DISTANT RAGs (first wave) and one honesty variable for the OUTGROUP RAGs (second wave). Furthermore, we control for game order in our analyses. Since participants taking part in both waves always played the DISTANT RAGs first, we instructed Wave II sites to play the DISTANT RAGs in a random order first, and then the OUTGROUP RAGs in a random order. Hence, we have two game-order variables for RAGs. The randomization of the DGs was not constrained by Wave I, so we have just one variable recording which game was played first. Finally, we created a binary variable for participants who took part in both the RAGs and DGs in order to control for a possible influence of earnings in the RAGs on decisions in the DGs.

2.1.5. Primes

To examine the causal relationship between moralizing gods and impartiality, some sites used priming materials that included moralizing gods, local gods, secular authority, and control stimuli. The motivation for choosing these stimuli was similar to that motivating our correlational analyses: to demonstrate that punitive and monitoring gods affect participants' behavior in a hypothesized direction more than comparable stimuli (hence we include the moralizing gods prime as a reference category in our models). However, whereas our aim was to investigate priming effects cross-culturally, the priming materials differed among sites, depending on availability of specific materials and situational constraints during testing. Four of our sites (Cachoeira, Mauritius, Sursurunga, Yasawa) used contextual priming in the RAGs (games were played inside a temple and a control location) while other sites used religious/secular imagery printed on a mat/table cloth (Coastal and Inland Tanna RAG&DG, Kananga DG, Huatasani RAG&DG, and

Mauritius DG); religious/secular material objects (Cachoeira DG, Lovu RAG, Marajó RAG, Mysore RAG&DG, Turkana RAG&DG, Tyva RAG&DG); or verbal priming (Sursurunga DG). See Fig. S3 for an illustration of mat with primes used in Mauritius. Importantly, some sites did not use control objects/primes (Mysore in RAGs; and Mysore, Cachoeira, and Sursurunga in DGs). We collapsed the no-prime condition together with the control condition. Apart from these priming materials, half of the participants at the Huatasani site played RAGs and DGs in a parish area, which may have had additional priming effects. However, including the dummy variable indicating where the experiments took place did not influence the Huatasani-specific results, nor the general results.

2.1.6. Data and Analysis Audit

The data were collected with pen and paper (all sites except Huatasani and Kananga where researchers used electronic tablets) and were transcribed to excel sheets. Independent auditors randomly chose 20% of these transcriptions from each site and checked for errors. Data were subsequently returned to researchers for correction and resubmitted. Furthermore, the lead author checked each numerical variable for its mean, minimum, and maximum value; controlled consistency of reported ages, years of education, and number of children; and whether allocations in each game summed to 30 in the RAG and to 10 in the DG. The final analytical R script was evaluated by an independent auditor for errors and the main RAG and DG analyses (five modeling steps) were reproduced in Stata, version 15 [19].

Fig. S3. An Illustration of Priming Materials in Mauritius: Moralizing god prime (Shiva); Secular authority prime (Police); and a Control prime (flowers).

Tab. S5. Site Description

Site	Prime	Moralizing God	Local God	DISTANT religion/*ethnicity*	OUTGROUP religion/*ethnicity*	Sampling	Economy	GDPPC
Cachoeira	MLSC	Christian God	Candomblé God (*Ogum*)	Candomble	Evangelical	Chain sample (temples)	Market	8678
Coastal Tanna	MLC	Christian God	Garden spirit (*Tupunus*)	Christian	Kastom	Cluster sample (census)	Horticulture	2805
Hadza	-	*Haine* (Traditional)	*Ishoko**	*Hadza*	*Datoga*	Entire camps	Hunting	879
Huatasani	MC	Christian God	Mountain Spirits/Christian Saints	Catholic	Evangelical	Random/chain sample (street)	Farming/ Herding	6027
Inland Tanna	MC	*Kalpapan* (Traditional)	Garden spirit (*Tupunus*)	Kastom	Christian	Entire community	Horticulture	2805
Kananga	MLSC	Christian God	*Kadim*/Ancestor spirits	*Non-Luluwa* Christian	*Non-Luluwa*	Random sample (census)	Market	456
Lovu	MC	Hindu Bhagwan	None available	Hindu	---	Door-to-door	Market	4375
Marajó	MC	Christian God	Virgin Mary	Christian	---	Random sample (census)	Market	11208
Mauritius	MSC	Hindu Shiva	Ghost (*Nam*)	Hindu	Muslim	Random sample (street)	Market/ Farming	9252
Mysore	MC	Hindu Shiva	Chamundeshwari	Hindu	Christian	Random sample (street)	Market	1593
Samburu	-	Christian/Traditional God (*Nkai*)	None available	Christian *Samburu*	*Samburu*	Random sample (households)	Herding	1377
Sursurunga	MLC	Christ. God (*Káláu*)	Spirit (*Sírmát*)	Christian *Sursurunga*	*Foreigner*	Random/chain sample (street)	Horticulture	2268
Turkana	MLSC	Christ. God (*Akuj*)	Ancestor spirits	Christian *Turkana*	*Turkana*	Door-to-door	Herding	1377
Tyva Republic	MC	Buddha Burgan	Spirit-masters (*Cher eezi*)	Buddhist	---	Random/chain sample (street)	Market/ Herding	14612
Yasawa	MC	Christian God	Ancestor spirits (*Kalou-vu*)	Hindu	---	Random sample (households)	Fishing/ Farming	4375

Note. *There are no Ishoko data in Wave II. Primes: M = Moralizing gods prime; L = Local gods prime; S = Secular authority prime; C = Control condition; GDPDPC = 2016 Gross Domestic Product Per Capita in $USD as computed by the World Bank.

2.2.   Field Sites

In this section, we present detailed descriptions of each Wave II site. For Wave I sites that did not take part in Wave II (Lovu, Marajó, Tyva Republic, Yasawa), we include verbatim transcriptions from the study accompanying the published Wave I data set [6] for readers' convenience. A summary of our sites can be found in Tab. S5.

2.2.1. Cachoeira, Brazil

Cachoeira (population 15,000) is located about 75 miles inland from the city of Salvador da Bahia in Northeastern Brazil. Nuclear and extended family households constitute the main societal units in Cachoeira, and female-headed households are common. Small-scale commerce, informal day labor, and tourism are the main sources of income. During Brazil's latest economic boom (2010-2013), commercial activity grew, the volume of cars and motorcycles increased, and the use of cell phones and social media became widespread. However, by August 2015 when the study was conducted, the economy had crashed spectacularly, and the currency had lost a third of its value in eight months. Many participants mentioned recent job losses and held a bleak outlook of their economic future.

We chose the Roman Catholic God as the moralizing deity and *Ogum*, one of the *Candomblé orixás*, as the local god. *Candomblé* is a religion of the African Diaspora, which centers on the cultivation of *axé*, the life-force of the universe. *Olorun* or *Olódùmarè* is the creator god, but most rituals are directed at the *orixás* and other entities. The religion is organized around autonomous groups called *terreiros* led by a priestess or priest (*mãe or pai-de-santo*). While *Candomblé* norms and beliefs are distinct, there is some syncretism with Roman Catholicism and *Candomblé* adherents see little conflict between following the religion and believing in the Christian god or other deities.

DISTANT co-religionists were defined as *Candomblé* practitioners in Salvador. The OUTGROUP chosen were Salvador *Evangélicos*, the term used for members of Evangelical and Pentecostal churches. The social and demographic profile of *Candomblé* adherents and *Evangélicos* is very similar (urban, low-income and predominantly female), although the former is specifically associated with Afro-Brazilians. It is not uncommon for members of the same family to subscribe to these different religions. Nevertheless, there is active hostility between these groups. *Candomblé* adherents are denounced as immoral devil-worshippers by *Evangélicos*, often by pastors and other public figures. On the other hand, *Candomblé* adherents mock *Evangélicos'* conservatism and condemn their leaders as money-hungry, hypocritical and intolerant.

The RAGs took place in January 2015. Testing was conducted in either local temples called *terreiros* as a local-god location prime or in secular areas, such as private homes and a community center. Participants were members of the specific *terreiros* or were recruited through word of mouth. The DGs were played in August 2015 at a community center with several private rooms and waiting areas. Object primes were placed on top of the table where games were played and included a Christian bible (moralizing god prime), *Candomblé* beads (local god prime), and a police hat (secular prime). The control condition was an empty table.

2.2.2   Coastal and Inland Tanna, Vanuatu

Tanna is a tropical volcanic island situated at the southern end of a chain of approximately 65 inhabited islands that make up the Pacific nation of Vanuatu. Participants were sampled from two locations on Tanna:

a predominantly *Kastom* Inland Tanna site and a predominantly Christian Coastal Tanna site. The Coastal Tanna site is a contiguous set of Christian coastal villages near the market town of Lenakel, with a total population of approximately 500. Residents are a combination of wage laborers, traders and subsistence farmers, some of whom have spent time living and working in Port Vila or doing seasonal work in Australia or New Zealand. All attend church but many also participate in local *Kastom* rituals. The Inland Tanna site is a rural *Kastom* community of subsistence farmers living in three small hamlets with a total population of approximately 90. In an effort to preserve the traditional *Kastom* way of life, individuals in these villages tend to eschew money and are much less likely to own electronic devices, or have worked for a wage.

Religion on Tanna is a mix of Christianity and traditional Melanesian and Polynesian beliefs and practices. Christian missionary activity began in the late 1830's following European contact and had a profound effect on the religious life of the island. Today, over 60% of the population of roughly 28,000 reports belonging to a Christian church. Despite the influence of Christianity, a 2009 census indicated that a fifth of the Tannese population identify as belonging to the *Kastom* religion. *Kastom* on Tanna is a revival and re-interpretation of pre-contact mythology and traditional cultural practices [20] and encompasses beliefs in a number of indigenous gods and ancestor spirits spread across the island. One of the most powerful supernatural agents, *Kalbaben*, features in many folk stories and is often referred to as the creator god, taking up residence in the highest peak on Tanna, Mt. Tukosmera. *Tupunus* refers to the spirit or spiritual forces surrounding the garden, and by extension to the local magic practitioner who controls the spirit-force. Every evening, men (including many self-identified Christians) engage in ritualistic kava-drinking and associated libation to *Kalbaben*. Given the religious divide between Coastal and Inland Tanna, we chose the Christian God as the moralizing god and *Tupunus* as the local god at the Coastal site, and *Kalbaben* as the moralizing god and *Tupunus* as the local god at the Inland site.

The coexistence of these two cultural and religious communities within the same island (Coastal and Inland Tanna) provided intuitive and meaningful group categories by which to distinguish DISTANT co-religionists and OUTGROUP members. Due to our sampling of both Christian and Kastom individuals, each group is the other's outgroup. However, the relationship between the two groups and their associated identities is complex. For example, some *Kastom* women originate from Christian communities and "marry-in" to *Kastom*. Conversely, while some Christians have little knowledge of *Kastom*, others (especially men) show pride in their *Kastom* heritage. Consequently, while it is clear that *Kastom* incorporates longstanding indigenous beliefs and practices, there is evidence of bi-directional borrowing and sharing of both religious beliefs and cultural practices between *Kastom* and Christian communities.

Due to the small size of the *Kastom* communities, we were able to sample all adults from the three *Kastom* hamlets for the Inland sample. The Coastal participants were recruited via cluster sampling from a village census, with the goal of sampling at least one individual from each household. Participants at the Coastal site were exposed to one of three randomly allocated prime conditions for the duration of game testing: a neutral control, a Christian prime, or a *Kastom* prime. Due to sample size constraints and widely varying levels of exposure to Christianity at the *Kastom* site, *Kastom* participants were primed with only the *Kastom* prime or neutral control. The Christian prime consisted of a cloth under the game area with a drawing of a church, a bible and a crucifix necklace. The *Kastom* prime consisted of cloth with images of three items used in *Kastom* ritualistic dance: a ritual *toka* stick, a feather stick, and a bundle of dried grass known as a *wilgen*. The neutral prime consisted of cloth with an image of three painted flowers. Primes were placed in front of the participant on the game area before they arrived for testing and remained there

until after they left the testing area, thereby ensuring that the participant played all the DGs under the same prime conditions. During gameplay, the cups were placed on top of the prime material.

2.2.3 Hadza, Tanzania

The Hadza are an indigenous population of hunter-gatherers living a semi-arid region at the base of a branch of the East African rift valley close to the Lake Eyasi basin. They live in small, mobile camps of approximately 30 individuals. Hadza life is characterized by high levels of food sharing, little to no stratification (e.g., chiefs), flexible residential patterns, monogamous marriage (although polygamy is occasionally practiced) and high levels of fertility. While their economy is largely subsistence-based – surviving on hunted game and gathered fruit, honey and nuts – the Hadza also frequently supplement their revenue with monetary earnings from tourists.

A particularly interesting feature of the Hadza, for the purposes of the present study, is that they were claimed to be minimally religious, as portrayed in past ethnographic descriptions [21]. However, recent interviews with the Hadza suggest that a majority believe in a god or gods [8]. In fact, an entity long featured in Hadza cosmology, *Haine*, may have acquired a god-like status to some Hadza, possibly due to the influence of Christian missionaries. However, the majority of Hadza still did not know or did not believe in *Haine's* ability to enact supernatural feats. Another cosmic entity, *Ishoko*, who the Hadza also named as a god, appears to be incorporated into Hadza beliefs about *Haine*. Most Hadza, when asked if *Haine* and *Ishoko* were the same or distinct entities, reported that they were one and the same. Hence, we selected only *Haine* as the moralizing god for Wave II, with no local god.

The local co-religionist was defined as a Hadza person living in the same camp as the participant, and the DISTANT co-religionist represented another Hadza person living in a distant, unspecified camp. Because of the fluid and flexible living arrangements of the Hadza, DISTANT co-religionists may have been or could be future in-group members. The OUTGROUP cup was reserved for a member of the Datoga tribe, a pastoralist population with whom the Hadza have a long history of conflict. The Datoga practice their own local religion centered around an androgynous deity (*Aseeta*) and ancestral spirits.

The study used cups of maize instead of money, which is a more meaningful currency for the Hadza. The researchers first traveled to a camp located in an area that the Hadza have been known to occupy in past years. After establishing contact in the first camp, the Hadza in that location directed researchers to the next nearest site, and so on. Due to changes in the protocol early in the design of the study, the researchers at this site did not run the DG with the DISTANT co-religionist vs. OUTGROUP cups and instead ran the LOCAL co-religionist vs. OUTGROUP cups.

2.2.4 Huatasani, Peru

Huatasani, a district in the Southern Peruvian Altiplano in the department of Puno, is home to 4,100 people, about 2,000 of whom live in the town of Huatasani. The research was conducted both in this town and in some of the districts' rural communities during the dry season (July and August 2015). The primary mode of subsistence in the area is agro-pastoralism. Many people, particularly in town, complement agro-pastoralism with commerce in larger cities, raising domesticated animals for market, producing cheese, or mining in an area about a 3-hour bus ride north of town. Further ethnographic information can be found in [22,23].

The vast majority of people in Huatasani consider themselves Catholic, and practice Catholicism in a largely syncretic form with influences from traditional Andean religious practices. *Dios*, the Christian God, was therefore selected as the moralizing god in our study. For the local god we first chose local spirits of the landscape called *apus* (from traditional Andean cosmovision). However, during the initial interviews many participants mentioned that they did not believe in *apus*. As such, 53% of participants were primarily asked in depth questions about their beliefs and practices regarding Catholic saints as local gods rather than *apus*. Specific Catholic saints and instantiations of the Virgin are often important for local communities, neighborhoods or areas.

DISTANT co-religionists were described as a Catholic person from either Vilque Chico or Taraco, similarly sized districts about 1.5 hours away by car on the Aymara or Quechua side of the language boundary, respectively. Huatasani is primarily on the Quechua side of the Quechua-Aymara linguistic boundary. The town is about 75% Quechua-speaking, but some of its nearest communities are Aymara-speaking. The DISTANT communities that we included in this study were both overwhelmingly Quechua-speaking, but lay on different sides of the language boundary. Christian evangelicals constituted the religious OUTGROUP for this study, since they are the only non-Catholic group with which everyone is familiar.

Our sampling protocols differed in town and the rural communities. In the former, we primarily utilized a convenience sampling method after making a general invitation to participate during the town's neighborhood meetings. These were carried out over several weeks. In the rural communities, we made an announcement after community meetings and took down the names of interested parties whom we then called in sequence to participate over the course of one or two intense days of running the study. We also assigned half of the DG participants to a moralizing god prime, and the other half to a control condition. The moralizing god prime featured a picture of a local mountain with a cross on top. The cross was photo-shopped to be bigger than its actual size, and a decorative border of crosses was added to the image. The control condition was a picture of a non-local mountain with a decorative flower border. To ensure that the participants saw the primes, these images were placed on the trays on which the cups sat during gameplay.

2.2.5 Kananga, Democratic Republic of Congo

Kananga, a city of roughly 1 million (the fourth largest in Congo), is the seat of the Provincial Government of Kasai Central, one of the poorest provinces of the D.R. Congo. Kananga has a moderate climate, and is situated at the transition from the equatorial forest to the savannah. It is an administrative city, in which the Provincial Government is by far the largest employer. The great majority of individuals, however, engage in some form of petty commerce, capitalizing on small arbitrage opportunities that arise in a place where decaying infrastructure creates sizeable frictions to the free flow of goods and people. Kananga is ethnically diverse, with 64% of the population identifying as ethnically Luluwa, but with sizeable minorities of Luntu, Luba, Kuba, Lele, Tetela, Songe, Bindi, Chokwe and other ethnic groups.

The religious landscape of Kananga is variegated. Nearly 100% of the population identifies as Christian, with 34% belonging to Pentecostal/born-again churches (*églises de réveil*), 23% to Catholic churches, and 15% to Protestant churches. The moralizing god in this setting is therefore the Christian God. Alongside professed beliefs in the Christian God, individuals reported beliefs in a number of local deities and ancestral spirits. We first chose as the local god *Kadima*; however, since no participant in the initial interviews indicated believing in *Kadima*, we used ancestral spirits as the local god instead.

Because born-again Christian denominations have the largest following in Kananga, we sampled only born-again Christians and defined the LOCAL co-religionists as born-again Christian Luluwa. DISTANT co-religionists were defined as born-again Christians who were not Luluwa. However, it is worth noting that the born-again churches are heterogeneous. Most churches were started by a specific charismatic founder. As such, we might expect the DISTANT co-religionist association to be relatively weaker in this context compared to other sites. Given the difficulty of travel in the region and other constraints, it was not possible to identify a geographically removed OUTGROUP. As such, OUTGROUP was defined as neither a born-again Christian, nor Luluwa.

Sampling proceeded as follows: first, a short 10-minute screening survey of 3,343 households was conducted in 2014. A satellite map of the city was divided into several hundred polygons, which were randomly sampled to be visited by enumerators. Within polygons, enumerators then randomly sampled households by counting a certain number of houses to skip between visits (`choose every Xth house'), and selected a random person from the household to participate. Selected participants completed all surveys and activities at their homes in the privacy of pop-up tents. We used object primes for the DG. Specifically, we made custom towels, which we spread over the area where the game was explained and demonstrated. On these towels were large color photos of (1) an image of the Bible (moralizing god prime), (2) an image of traditional masks (local god prime), (3) an image of flowers (neutral), and (4) an image of the national police logo (secular authority prime). Due to an inability to secure a sufficient number of coins at this site, we used envelopes and bills instead of cups and coins.

2.2.6 Lovu, Fiji

"Indo-Fijians are a diaspora population brought to Fiji from India by the British as indentured workers. Wage labor is the primary source of income but Indo-Fijians also farm sugar cane. Religiously, Indo-Fijians are primarily Hindus and Muslims though some are Sikhs or Christian. The present sample includes Hindus from Lovu village on the island of Viti Levu. Participants largely claimed that all Hindu gods are different aspects of one single deity, Bhagwan and this deity was therefore selected as the moralistic deity for this study. As one could not be identified, no Local Deity was selected. In the experiments, the DISTANT co-religionist was a Hindu living on Vanua Levu, the second largest island in Fiji. For the Indo-Fijian sample, this study was conducted in Fiji-Hindi and English. Participants came primarily from the villages of Lovu Seaside and Lovu HART. Some additional participants came from the nearby villages of Koro Pita, and Drasa. They were contacted in person at their homes ahead of time and asked if they would like to participate. The Lovu research group obtained names and contact information from those who agreed. Though specific time slots were given to all participants ahead of time, almost no one showed up in their allotted time slot. Because of this, participants were taken whenever they showed up. Since every identifiable Hindu household in Lovu Seaside and Lovu HART were contacted, all participants from those villages were accepted. Only participants from Koro Pita and Drasa who had been previously contacted, or who showed up at the same time as those that had been previously contacted, were accepted. Participants from outside of Lovu who had been told about the experiment by their friends or family members after their friends and family members had participated were not allowed to participate." [6]

2.2.7 Marajó, Brazil

"At the mouth of the Amazon River lies Marajó Island, Brazil. Pesqueiro is a small fishing village on the east side of Marajó Island. Residents of Pesqueiro rely primarily on fish sales and tourism. Most residents are Catholic, although some are Evangelical Protestants. For this sample, the Moralistic Deity was the Christian

God (Deus), and Our Lady of Nazareth (Nossa Senhora de Nazaré), the region's patron saint served as the Local Deity. The DISTANT co-religionist was a Christian from Rondon, a distant but familiar town in mainland Pará state. For residents of Pesqueiro, the study was conducted in Portuguese. Participants were sampled from the entire village. An up-to-date census of the entire population (total: 309; 92 families) was obtained and all adults were included for random selection. Individuals were approached in their homes and invited to take part in the study. If unavailable, an alternative was selected from a reserve list (also randomly generated). Thirty-four out of a total 128 individuals were unavailable on the scheduled date for the study, leaving a total of 94 scheduled participants, who were randomly assigned to conditions. Fourteen people did not show for their session." [6]

2.2.8 Pointe aux Piments, Mauritius

Mauritius is an island nation in the Indian Ocean, located on the Tropic of Capricorn and forming part of the Mascarene archipelago. It has a population of 1.3 million people, composed of a wide range of ethnic groups, including people of Asian, African, and European origin. Our field site, Pointe aux Piments, is a rural village on the Northwest coast with a population of 9,000, mostly employed in agriculture, fishing, tourism, and other services. Mauritian Hindus, who comprised our sample for this study, have a patrilineal, patrilocal kinship system. Although most households consist of nuclear families, residential plots of land typically consist of multiple patrilineally-arranged households, where the entire extended family lives around a shared central yard.

The majority of Hindus in Pointe aux Piments are adherents of Sanatana Dharma, which is a mainstream form of traditional Hinduism originating from Northern India. The most important god among our participants, Shiva, served as the moralizing god at this site. Shiva is known to have benevolent as well as fearsome qualities (Destroyer and Transformer). Belief in spirits is widespread in Mauritius irrespective of religious affiliation [24]. These beliefs are a syncretic mix of Christian and animistic concepts of African origin and are largely shared between ethnic and religious groups. These spirits are the souls of dead people, and can be benevolent or evil, depending on the circumstances of the person's death and the rituals performed for them. This notion of spirit was used as the local god.

Of all the various groups in Mauritius, Muslims are seen as the most reclusive and conservative community. In addition, while they make up 17% of the population in Mauritius, there are only a few Muslims in Pointe aux Piments. For this reason, the OUTGROUP in our study was a "Muslim from Mahebourg", a distant town that has the biggest Muslim population in Mauritius. The DISTANT co-religionist was a Hindu from La Gaulette, which is a small, distant village in the South.

Data collection for the RAG took place over two separate periods. The DISTANT RAGs and interviews were conducted in 2013. For the OUTGROUP RAGs, we retrieved participants from our original sample in 2015, at which time we also recruited new participants for the DGs. Contextual primes were used for the RAGs. A local Hindu temple was used for the religious condition. For the neutral context, we used a restaurant in 2013 and an adjacent apartment of similar dimensions in 2015 (as the restaurant itself was unavailable). For the DG, we used the same apartment building as in the RAG experiment, using three separate rooms as playing areas, each equipped with a different visual prime (an image printed on a tablecloth). The religious prime consisted of a Shiva lingam (non-anthropomorphic symbol for the god Shiva), accompanied by a cobra and a trident (both attributes of Shiva) and by the text "Lord Shiva". For the secular authority prime, we used the local police emblem, which includes a depiction of a dodo and a deer, accompanied by the words "Mauritius Police Force (MPF)". Finally, for the neutral condition we used

a picture of two daisies and a butterfly, accompanied by with the word "Butterfly" (see Fig. S3). Participants in the DG were recruited by local assistants off the streets of the larger area of Pointe aux Piments, and were randomly assigned to one of these three conditions.

2.2.9   Mysore, India

Mysore is the southernmost city of the Indian state Karnataka, and is situated between the Kaveri and Kabini rivers. The climate is tropical savanna and summer spans the months of March through June, followed by a rainy season from July through November, and winter from December through February. The District of Mysore consists of an urban region with over 900,000 residents, and a rural region with over 1.6 million residents. Residents have an industrial subsistence-based economy, with household industries, agricultural labor, and cultivation comprising the main sources of income. The current study focused on people located in the urban region of the Mysore District.

The three major religions in the region are Hinduism (87%), Islam (8.9%), and Buddhism (1.4%). Shiva is the main god of Hinduism in Mysore and was selected as the moralizing god. We used Chamundeshwari, who is considered to be a form of Durga, as the local goddess. In Shaivite Hinduism, which characterizes the majority of Hindus in South India, Shiva is believed to be responsible for creation, destruction, and maintenance. Chamundeshwari is portrayed as a ferocious tiger-riding warrior goddess, but is also viewed as a "mother goddess" who protects all residents of Mysore.

The LOCAL co-religionist was defined as a randomly selected person in the participant's neighborhood. The DISTANT co-religionist was defined as a randomly selected Hindu from the neighboring state of Tamil Nadu, and OUTGROUP was defined as a Christian from Tamil Nadu. The religious practices of Hindus in Tamil Nadu are very similar to those of Hindus in Mysore. Some Mysoreans also stated that Christians continue to practice Hindu rituals in addition to Christian holidays.

Locations for games and interviews included a variety of indoor and outdoor settings. Since statues of deities and religious images are ubiquitous in South Indian homes, extra care was taken to select places without religious paraphernalia. In all cases, the games were conducted in a private area separate from the waiting room and interview room. Research assistants targeted eight to ten adults in their communities who used convenience and snowball sampling to recruit Hindu participants. Although this sampling strategy was not random, participants varied substantially by age, sex, and occupation. To prevent the risk of collusion, we did not allow people to participate if they: 1) showed up uninvited after the introduction of the study in a given session; or 2) were invited by participants who had already participated. Across both the RAGs and DGs, half of the participants were presented with a prime and the other half were not. The Shiva lingam was chosen as the moralizing god prime because it is considered one of the oldest idols used to worship Shiva.

2.2.10 Samburu, Kenya

Samburu County is a semi-arid region of 20,000 square kilometers, located in north central Kenya. The population is primarily ethnic Samburu, although there are small numbers of other ethnic groups as well. Livestock herding, or pastoralism, is the main livelihood, although the Samburu people are increasingly diversifying their economic activities to include wage labor and trade (in livestock, forest products, food items, and other consumer items). In areas with higher and more reliable rainfall, some Samburu grow crops including maize, beans, potatoes, kale and other vegetables. However, cultivation is a high-risk activity given the frequency of droughts. Samburu society comprises eight sections, each divided into a

number of clans, sub-clans and lineages. It is a polygynous, patrilineal and patrilocal society. There is quite a bit of variation in settlement structure and a trend toward smaller settlements.

Samburu indigenous religion is monotheistic, with belief focused on the god, *Nkai* who is understood to be omniscient and omnipresent, but is especially associated with high places like mountain tops. No other gods were mentioned by our informants. Catholic and Protestant missionary activities among the Samburu date back to the 1930s, and the Christian god is also referred to as *Nkai*. *Nkai* was therefore selected as the moralizing god in this study. However, there is considerable variation in religious self-identification and practice. For example, all informants named rituals related to male age-grade ceremonies, including male circumcision and a series of rituals that mark the progress of men from warrior to elder status. Only a few informants named Christian practices such as attending church and celebrating holidays such as Christmas and Easter as important religious rituals.

DISTANT co-religionists were identified as people who shared the participant's religious affiliation or beliefs but who lived in Poro, an area about 50 kilometers away from Mbaringon (our field site). The inhabitants of Poro are ethnically Samburu; however, they are primarily from another kinship section. There is no obvious tension or conflict between the people of Mbaringon and Poro, nor are there strong positive ties, aside from the fact that they belong to the same ethnic group. The OUTGROUP was defined as a person from Poro without mentioning religious affiliation.

The RAGs were conducted in Mbaringon in July 2014, at Lesorogol's research center. Forty players were drawn from an existing random sample of 100 households. One adult member per household was invited to play the games. Separate areas were established for pre-game surveys (demography), game play, post-game interviews, and payments. No religious primes were used. We conducted all the games during a two-day period, and then asked people to come back for the religiosity interview over the next two weeks.

2.2.11 Sursurunga, Papua New Guinea

There are approximately 4000 speakers of Sursurunga who live in 19 nucleated villages along the southeastern coast of New Ireland, Papua New Guinea. Most Sursurunga are subsistence horticulturalists whose gardens provide a tuber-based diet of taro, various varieties of sweet potato, and manioc. Store-bought supplements such as rice and canned fish accompany some meals. Income from cash crops such as copra and cacao have long been the primary source of money, although a recent outbreak of vascular streak dieback has wiped out most people's cacao holdings. Matrilineal descent in the form of named clans governs a number of features of Sursurunga life, including access to garden land, marriage, and the sequence of mortuary rituals conducted in honor of the deceased.

All Sursurunga speakers maintain at least a nominal commitment to Christianity. Wesleyan Methodist missionaries established a church at Nokon around 1925 and at Tekedan shortly thereafter. Like many other Pacific Island peoples, the Sursurunga have incorporated Christianity into their belief systems, redefining the origins of moieties, the array of unseen beings, and the norms of generosity and reciprocity as biblical. For almost all Sursurunga, the most prominent being is *Káláu*: God the Father in Christian Trinitarian thought. Hence, *Káláu* was chosen as the moralizing god. There are also a number of local spirits, many of whom cause illness, injury, or misfortune of some sort, including those guided to do so by sorcerers. We chose *sirmát* as the local god, a spirit that is independent of the control of sorcerers. Men occasionally "marry" a *sirmát*, which means, among other things, that they do not disclose her as the source

of any good fortune they might have. *Sirmáts'* primary interest in human behavior is pragmatic: they do not like and are believed to try to punish human behavior that disturbs their tranquility.

The DISTANT co-religionist label represented individuals of the same Christian denomination from another clan. The OUTGROUP represented individuals who live in a different part of New Ireland, much farther north, toward the provincial capital Kavieng. The transliterated version of the OUTGROUP cup was "foreigner/different one."

For small communities, subjects were handed a 3 x 5 cm card with a number on it and were told that on an upcoming day, a certain set of numbers would be called upon to participate in the games. Corralling was used for larger groups, with a local research assistant around in order to make sure that there was no collusion between participants. Priming was used in both the RAGs and DGs. For the RAGs with a moralizing prime, the experiments were conducted in a church building. For the DGs with a moralizing prime, the moralizing-god questions from our interview were asked prior to the DGs, and the rest of the interview was concluded later. In the local-god condition, the local god questions from our interview were asked just before playing the DGs.

2.2.12 Turkana, Kenya

The Turkana are semi-nomadic pastoralists with a population of approximately 1 million. They inhabit the semi-arid region of north-west Kenya, an area prone to frequent droughts. Within Kenya, the Turkana neighbor the Pokot, Samburu, Rendille, and Borana pastoral ethnic groups, with whom cattle raiding and interethnic tensions are common. They have low literacy rates and limited market integration. Most individuals make a living by herding cattle, small livestock (goats and sheep), and camels, which provide the main sources of household protein. Livestock are periodically sold in town to purchase staples like maize flour, beans, sugar, tea and tobacco. The Turkana are patrilineal, patrilocal, and polygynous. They are separated into approximately 18 different territorial sections (*ekitela*), which are geographically distinct, with each territorial section living on and having grazing rights to certain delineated land areas. Cross-cutting these territorial sections are approximately 24 different ethnic "marks" or clans (*emacar*). Marriage is exogamous at the clan level.

The moralizing god in this study was *Akuj*, a primary deity among the Turkana who is associated with the sky, particularly as the giver of life and of rain (two elements that are highly associated in Turkana society). *Akuj* is said to live at the tops of mountains, especially those mountains that are associated with rain. He is benevolent and omnipotent, and actively controls all major blessings in life. With the expansion of Christian missions starting in the 1960s, Christianity co-opted *Akuj* as the creator and one true God, and took the Turkana term for "an evil spirit," known as *ekipe*, as a single Satan character. There is considerable individual variation in the extent to which people have adopted Christian practices. When individuals who have been strongly influenced by Christianity refer to *Akuj*, they do not typically distinguish between the local primary god, *Akuj*, and the Christian monotheistic god, *Akuj*. Aside from *Akuj*, there is also a belief in the existence of small, terrestrial ancestral spirits known as *ngipean* or *ngikaram*, who are more limited in their scope and powers than *Akuj*. Some spirits can be quite malevolent and may require animal sacrifices to be appeased when they are angry. We chose these ancestral spirits as the local god.

The DISTANT co-religionist was defined as "a Turkana person you don't know who attends the church in Awar-Naparan," and the OUTGROUP was defined as "a Turkana person living in Awar-Naparan whom you don't know and who never attends church." Awar-Naparan is a Turkana settlement about 25

kilometers from the field site, moving closer to the town of Kakuma, and is about 2-3 times larger than the settlement areas used in this study. Given the distance to Awar-Naparan, it is unlikely that participants would have close/daily interactions with people there. The majority of the study participants and the people from Awar-Naparan belong to the same territorial section (Ngiyapakuno), and there are no recent or historical animosities between these two communities.

Prior to the start of this project, we had conducted a house-to-house census for the four settlement areas included in the study and had randomized the collected names for each location. The first 25 people from each list were used in the RAG sample, with each of the four locations corresponding to a different day of play. The next 50 names on each list made up the DG sample, with each location corresponding to a different day of play. The games were played in small tents and we used tokens (dried beans) instead of coins, as we were unable to locate a sufficient number of small coins near the field site. During the RAGs, we used two secular tents (each containing a bottle of water and notebook) and two moralizing god tents (each containing a bible, rosary, and large crucifix). The DGs consisted of four tents: one secular, one moralizing god, one local god (containing a clay jar with red ochre powder, which is commonly used by local seers for divination), and one secular authority tent (containing a camouflage jacket commonly worn by police officers).

2.2.13 Kyzyl, Tyva Republic

"Hailed informally as the geographic centre of Asia, the Tyva Republic lies in southern Siberia, just north of the western portion of Mongolia. Urban Tyvans subsist primarily on a market-based economy while rural Tyvans herd sheep, goats, cattle, and/or yaks, This sample was drawn exclusively from the capital city of Kyzyl. Most Tyvans identify as Buddhist, but also engage in religious practices associated with shamanism, animism, and totemism. Buddha-Burgan ('Buddha God') functioned as the Moralistic Deity, while an unspecified cher eezi, or 'master of the place', a spiritual lord over resources and regions functioned as the Local Deity. The DISTANT co-religionist was from Ak Dovurak, a familiar asbestos- mining town about a 4-hours west of Kyzyl by car. All experiments and interviews were conducted in Tyvan, though some did ask for game instructions in Russian for clarity. The Tyva research group's efforts to have recruits participate in follow-up sessions were futile. They therefore conducted single sessions, each lasting around 90 min per participant. Four assistants used random, chain and snowball sampling to recruit people who would contact the lead assistant to coordinate meeting places and times. Assistants only divulged that they required up to 90 min of participants' time and that they would be paid for it. They also encouraged enlisted participants to also recruit more people before their participation, but not after, and they refused all unsolicited candidates. Assistants also asked each participant about all of the information that they knew about the study and everyone conveyed only the allowed information. Assistants recruited people on the basis of their Buddhist and/or Shamanist identification, Tyvan ethnicity, and fluency of the Tyvan language." [6]

2.2.14 Yasawa, Fiji

"Yasawa Island is on the northwestern corner of the Fijian archipelago. Yasawans are primarily fisher-horticulturalists. The majority of Yasawans identify as Wesleyan Methodists though a large minority associate with the evangelical Assemblies of God. However, traditional beliefs and practices devoted to ancestor spirits (Kalou-vu or 'root/ancestor god') continue to thrive. For this sample, the Moralistic Deity was the Christian 'Bible God', while the Kalou-vu represented the Local Deities. Cups for the DISTANT co-religionists in Yasawa were Fijian Christians from another island. The Yasawan protocols were all conducted in Bauan. Indigenous Fijian participants were recruited by invitation based upon their location within the village. The games were played in houses across the village, one on each day. Villagers living closest to those

houses were invited to attend in waves of eight participants by Indigenous Fijian research assistants who administered the games and post-game interviews." [6]

3   Supplementary Results

3.1 Game Description and Analyses

To assess the influence of belief in punitive and monitoring moralizing gods on impartiality in money allocations, we employed the RAGs and DGs with four iterations of each game. For each iteration, participants allocated money to cups that varied the identities of money recipients (see Fig. S4). The dyads were as follows:

DISTANT GAMES:

- *Self vs. Distant co-religionist (SELF vs. DISTANT)*
- *Local co-religionist vs. Distant co-religionist (LOCAL vs. DISTANT)*

OUTGROUP GAMES:
- *Self vs. Outgroup (SELF vs. OUTGROUP)*
- *Distant co-religionist vs. Outgroup (DISTANT vs. OUTGROUP)*

The game data were analyzed in R, version 3.4.1 [25] by using pre-registered scripts as a basis for subsequent, more complex analyses (compare scripts registered at 'https://osf.io/epkbw/' with 'MoralizingGods_Rcode_V1.0.txt' in the online Supplementary Code). In each game, we modeled the number of coins allocated in the less parochial cups: the DISTANT co-religionist cup against the SELF and LOCAL co-religionist cups in the DISTANT games, and the OUTGROUP cup against the SELF and DISTANT co-religionist cups in the OUTGROUP games.

To analyze whether there was a systematic bias in the RAGs that can be predicted by the ratings of moralizing gods, we fit binomial models by using the function *glm.* The choice of binomial family was motivated by the fact that the die-roll distribution came from a series of 30 Bernoulli trials per RAG, thus the predicted binomial distribution served as a probability baseline to which participants' allocations could be compared. Looking at the raw distributions, the histograms revealed (Fig. S5) that participants deviated from the binomial distribution, biasing their allocations toward the more parochial cups. Furthermore, the mean allocations per game showed that none of the grand means for the pooled sample crossed the 15-15 split in favor of the less parochial cups, albeit some sites showed less of a bias than others (Tab. S6).

Next, the DG distributions displayed in Fig. S5 revealed biases similar to those we observed in the RAGs, with one crucial difference: higher zero counts in the DGs. This difference suggested that the decision-making process in the DGs was censored at zero and warranted the use of modeling strategy that accounts for this zero-censoring. We first considered using Tobit or Poisson models [26,27], but the DG data exhibited overdispersion, so we opted to compare the Tobit model with negative binomial model that accounts for overdispersion [28]. Comparing the fully-specified Tobit and negative binomial models with Akaike's information criterion (AIC) revealed that the Tobit model fit best to our data in all four DGs, hence

Fig. S4. An Illustration of Cups Used for Money Allocation in Mauritius

we report the Tobit estimates for non-nested models, using the *tobit* function from the *AER* package [29]. All the plots were created using the package *ggplot2* [30].

The binomial (RAG) and Tobit (DG) models allowed us to examine the effects of moralizing gods' punishment-monitoring score on money allocations in the DISTANT and OUTRGROUP RAGs and DGs (see main text and later in this section for predictions). To test the stability of our main effect, we examined whether this punishment-monitoring score predicts game allocations reliably across five model-specifications. In each step, we retained our main effect of interest: moralizing gods' punishment-monitoring abilities and controlled for site mean allocations; and in subsequent steps, we added further control variables. Below we detail each of the five modeling steps:

1) *Key Predictor and Control Variables:* In the first step, we modeled the ratings of moralizing gods' punishment and monitoring, controlling for the site-specific mean allocations. Since the raw allocations for each RAG and DG displayed in Fig. 1 and in Tab. S6 suggested that there was substantial between-site variation in the average cup-allocation, we held the mean allocation at each site constant by including a categorical variable "SITE" with Mysore as the reference category. In other words, we compared only allocations within sites. Note that the selection of Mysore was motivated by the fact that the Mysore data comprise all four iterations of both the RAG and DG, allowing us to have comparable intercepts across our models. However, this choice affects only the intercepts, not the coefficients of our predictor variables.

2) *Demographic Variables:* We added demographic variables that have been shown in previous research to influence decision-making in economic games [1–3,31]. Since demographic data were unproblematic to collect, the second modeling step retained most of the participants, yet controlled for site-specific mean allocations, treatment effects, and differences in age, sex, household size, number of children, years of formal education, and material insecurity (we call these the 'reduced models').

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3) *Local Gods:* Adding the local gods' punishment-monitoring scores served as a control variable for the moralizing gods' punishment-monitoring effects, showing that not all supernatural beliefs lead to intra-religious impartial allocations. Adding this variable eliminated sites that were not able to identify belief in local gods/spirits: Hadza, Lovu, and Samburu.

4) *Normative Indices, Reward Measures, Emotional Closeness, and Police:* We added the ratings of normative indices and reward abilities for both the moralizing and local gods in the fourth step. The former variables controlled for gods' specific concerns and the latter for their rewarding abilities, testing whether belief in rewarding gods may promote intra-religious impartiality and rule following better than monitoring and punishment [32]. Variables measuring emotional closeness toward LOCAL and DISTANT co-religionists and toward OUTGROUPs hold constant individual-level hostility/sympathy toward allocation recipients in our games. Finally, a variable pertaining to evaluation of local secular authority (e.g., police) tested whether trust in police may act as a substitute for the effects of punishing and monitoring gods on intra-religious impartiality [33]. Since the models in the fourth step preserved the highest information value while retaining a substantial portion of our sample, we call these models 'full' and present them in the main text.

5) *Game Control Variables:* in the final step, we added game control variables (game order and mentioned honesty). Since this eliminated the Mauritian site, we added game control variables only in step five.

Regarding the presence of sites in the models, the majority of Wave I sites that took part in Wave II collected additional OUTGROUP RAG data from the same participants who took part in the DISTANT RAGs during Wave I, although this does not apply to the Hadza who did not play the OUTGROUP RAGs. Likewise, Cachoeira (Wave II site) did not collect the OUTGROUP RAG data. Additionally, the DGs were played only at sites in the second-wave data collection (except for Samburu where the DG data were not collected), hence the maximal number of sites for each DG is 10. Since the Hadza played the DISTANT vs. OUTGROUP DG with the LOCAL co-religionist vs. OUTGROUP cups, we excluded this site from the DISTANT vs. OUTGROUP analysis. The specific number of sites and participants used in each model are reported in tables with the results.

Apart from the five modeling steps, we also performed three robustness checks: 1) we checked whether the punishment-monitoring effects hold when pooling together the two DISTANT cup-dyads (models of stacked data); 2) we used generalized linear mixed models (GLMM) with sites as varying intercepts to corroborate our findings with a different modeling technique (supplementing site fixed effects used in the main text); and 3) we explored how the RAG and DG results change when we exclude sites with a DISTANT co-religionist and/or OUTGROUP definition that deviated from the original instructions.

1) The first robustness check collapsed the two DISTANT games, investigating general tendencies in allocations to DISTANT co-religionists. Since participants had two allocations in each model, we fit multi-level binomial models for the RAG, using the function *glmer* from the *lme4* package [34] with participants' ID as a nesting factor and a binary game variable as a simple fixed effect (differentiating between the LOCAL co-religionist and SELF games). For the DG hierarchical analyses, we had to use negative binomial models (with the *glmmadmb* function from the package *glmmADMB* [35]), because the random effects structure is not specified for the Tobit models. Note that this robustness check is not reported for the OUTGROUP games because we made different predictions for the SELF vs. OUTGROUP and DISTANT vs. OUTGROUP games, hence, we should not expect to see a general effect for both games.

2) In the second robustness check, we used multi-level models in order to vary the intercepts for each site. This check was motivated by the fact that the number of participants varied by site and some site-specific means may have been overestimated [36]. Partial pooling of intercepts can overcome this potential problem while adjusting the general intercept for the nested structure of our data (participants nested within sites). We used hierarchical binomial models (RAG) and hierarchical negative binomial models (DG) to fit the full models (modeling step four) with varying site-intercepts.

3) In the third robustness check, we examined only the subset of sites that adhered to the original DISTANT and OUTGROUP definitions, excluding the sites that had to deviate from this definition when adapting the experimental protocols to the facts on the ground (religious affiliation mixed with ethnicity): Hadza, Kananga, Samburu, Sursurunga, and Turkana. See section S2.2 for the rationale of OUTGROUP selection at each site. Thus, these models focus on allocations to cups defined as distant co-religionists and outgroup members of a different religion (rather than a mixture of religion and ethnicity).

Following these robustness checks, we also modeled between-site variation using GLMM and site-level variables. First, to assess whether Wave I results replicated using Wave II sites, we examined the differences in moralizing gods' punishment-monitoring effects on DISTANT allocations between the two data-collection waves. In this Wave model, we included varying intercepts for sites and interacted the punishment-monitoring score with a binary indicator of whether a site collected DISTANT RAG data during Wave I or II. To test the predicted differences between Christian and non-Christian sites in allocations to OUTGROUPs, we interacted the punishment-monitoring score with a binary site-level variable indicating whether the moralizing god at each site is Christian or not, including varying intercept for each site.

Finally, to model the priming effects, we first included the treatment variable with controls for the site-specific mean allocations and demography. These reduced models tested the main priming effects on the maximum available number of sites (nine for the DISTANT RAGs, four for the OUTGROUP RAGs, and nine for the DISTANT and OUTGROUP DGs). In the second step, we included an interaction between the treatment variable and the moralizing gods' punishment-monitoring score to examine whether the priming effects were moderated by this variable.

Tab. S6. Mean DISTANT/OUTGROUP Allocations (SD) for Random Allocation and Dictator Games

Site	Random Allocation Game [Allocations: 0-30]				Dictator Game [Allocations: 0-10]			
	SELF x DISTANT	*LOCAL x DISTANT*	*SELF x OUTGROUP*	*DISTANT x OUTGROUP*	*SELF x DISTANT*	*LOCAL x DISTANT*	*SELF x OUTGROUP*	*DISTANT x OUTGROUP*
Cachoeira	15.19 (3.07)	14.40 (2.82)	---	---	2.70 (2.15)	3.30 (2.08)	2.75 (2.25)	4.82 (2.54)
Coastal Tanna	14.68 (2.51)	14.86 (2.88)	13.29 (3.47)	14.56 (3.34)	4.34 (2.35)	4.84 (1.69)	4.34 (2.11)	4.86 (1.69)
Hadza	12.18 (4.31)	11.49 (4.51)	---	---	1.37 (1.47)	1.68 (1.66)	0.78 (1.32)	---
Huatasani	12.87 (3.78)	14.66 (3.20)	13.38 (2.90)	14.61 (3.58)	3.91 (2.06)	4.12 (1.54)	3.93 (2.23)	4.55 (1.34)
Inland Tanna	14.07 (3.80)	14.59 (3.43)	13.30 (4.24)	14.83 (4.49)	3.49 (1.92)	4.74 (2.11)	3.49 (1.97)	4.20 (2.10)
Kananga	12.52 (3.96)	15.50 (2.84)	12.74 (2.56)	14.52 (3.12)	3.91 (1.98)	5.11 (1.31)	3.88 (1.92)	4.94 (1.11)
Lovu	14.93 (2.96)	14.95 (2.98)	---	---	---	---	---	---
Marajó	14.57 (3.74)	14.43 (3.47)	---	---	---	---	---	---
Mauritius	13.53 (3.33)	14.35 (3.32)	13.24 (4.00)	14.34 (3.43)	4.42 (2.90)	4.02 (2.15)	3.96 (2.86)	4.19 (2.19)
Mysore	14.55 (2.92)	15.00 (2.66)	14.79 (4.04)	14.38 (3.36)	4.71 (2.66)	3.89 (2.15)	4.39 (2.59)	4.96 (1.65)
Samburu	15.74 (3.77)	15.31 (4.32)	15.90 (3.77)	15.53 (3.01)	---	---	---	---
Sursurunga	14.00 (2.73)	15.39 (2.38)	14.32 (3.36)	14.89 (2.43)	4.60 (1.91)	5.15 (1.43)	4.60 (2.02)	4.85 (1.65)
Turkana	12.94 (3.24)	13.92 (3.71)	13.38 (4.25)	14.97 (3.49)	3.53 (2.00)	4.15 (2.19)	3.82 (2.33)	4.56 (2.29)
Tyva Republic	15.30 (2.95)	14.53 (2.49)	---	---	---	---	---	---
Yasawa	11.61 (4.98)	13.28 (3.80)	---	---	---	---	---	---
Grand M	13.95 (3.65)	14.36 (3.40)	13.86 (3.89)	14.72 (3.42)	3.47 (2.40)	3.89 (2.18)	3.36 (2.47)	4.65 (2.04)
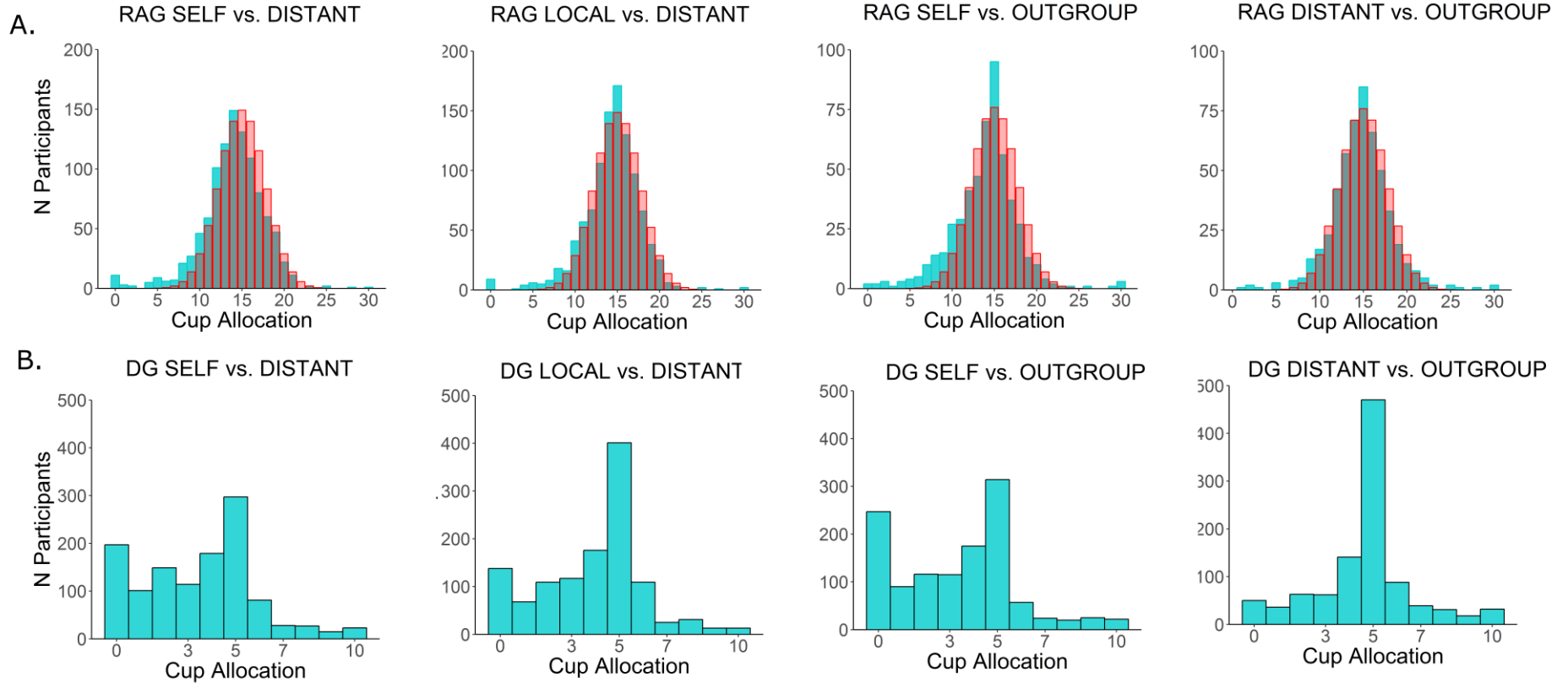
Fig. S5. Histograms of Random Allocation Games and Dictator Games. A. RAG counts of DISTANT/OUTGROUP cup-allocations (blue) plotted against counts predicted by the binomial distribution (red). Note that the y-axis values correspond to the overall N of participants. **B.** Histograms of DISTANT/OUTGROUP cup-allocations in the Dictator Games.

3.2. Explaining Allocations to DISTANT Co-religionists

3.2.1. Five modeling steps

Employing the five-step modeling strategy, we first examined the stability of the moralizing gods' punishment-monitoring effects in a series of binomial regressions (RAG) and Tobit regressions (DG). For the DISTANT RAGs, the positive effect of gods' punishment-monitoring score on allocations to the DISTANT co-religionists held across all model-specifications, with odds ratios ranging from 1.15 to 1.26 when playing with the SELF, and from 1.15 to 1.22 when playing with LOCAL co-religionists (see Tab. S7-8).

For the DISTANT DGs, the estimates of moralizing gods' punishment-monitoring variable in the SELF vs. DISTANT DG were volatile; while the lower 95% CI varied around zero, the upper bounds were as high as a 2.24 coin-increase in the DISTANT cup (see Tab. S9). A possible reason for this volatility might be the introduction of local gods' punishment-monitoring variable in step three, which explained a significant portion of variation that was accounted for by the moralizing gods' variable in previous steps (albeit there was no obvious multicollinearity, VIF scores were all < 1.6). In the LOCAL vs. DISTANT DG, the estimates of moralizing gods' punishment-monitoring effects ranged from a 0.56 to 0.89 increase in coin-allocations to DISTANT co-religionists. These effects were stable except for Model 5, which included game-control variables (see Tab. S10). However, the decreased precision of our estimate in Model 5 stemmed from dropping the Mauritian site due to the missing game-control variables rather than from the explanatory power of those variables (Mauritian participants were not asked what the game reminded them of). When we excluded Mauritian participants without adding the game-control variables, the estimates were very similar to those in Model 5 of Tab. S10 (compare with Model 4, Tab. S11).

Tab. S7. Odds Ratios with 95% CIs for Self vs. Distant RAG. Coefficients represent allocations to the DISTANT cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	1.15*	1.15*	1.23**	1.26**	1.24*
	(1.03, 1.29)	(1.02, 1.29)	(1.07, 1.40)	(1.06, 1.49)	(1.04, 1.48)
LG Pun-Mon			1.03	1.07	1.07
			(0.93, 1.14)	(0.94, 1.21)	(0.94, 1.22)
MG Normative index				0.98	0.98
				(0.94, 1.02)	(0.95, 1.02)
LG Normative index				0.99	0.99
				(0.95, 1.03)	(0.95, 1.03)
MG Reward				0.98	0.99
				(0.86, 1.11)	(0.87, 1.12)
LG Reward				0.98	0.98
				(0.87, 1.11)	(0.87, 1.11)
Age centered		1.04*	1.06**	1.07**	1.07***
		(1.01, 1.08)	(1.02, 1.10)	(1.03, 1.11)	(1.03, 1.12)
Sex (1 = Males)		1.02	1.06*	1.03	1.03
		(0.97, 1.07)	(1.00, 1.12)	(0.97, 1.10)	(0.96, 1.09)
Education centered		1.00	1.00	1.01	1.01
		(0.99, 1.01)	(0.99, 1.01)	(1.00, 1.02)	(1.00, 1.02)
Children		0.99	0.99	0.99	0.99
		(0.98, 1.01)	(0.97, 1.00)	(0.97, 1.00)	(0.97, 1.00)
Household size		0.99	1.00	1.00	1.00
		(0.98, 1.00)	(0.99, 1.01)	(0.99, 1.01)	(0.99, 1.01)
Material insecurity		1.01	1.05	1.03	1.02
		(0.94, 1.09)	(0.97, 1.14)	(0.94, 1.12)	(0.93, 1.12)
Distant closeness				1.01	1.01
				(0.99, 1.03)	(0.99, 1.04)
Distant similarity				1.02	1.02
				(0.99, 1.05)	(0.99, 1.05)
Police evaluation				1.03†	1.03†
				(1.00, 1.07)	(1.00, 1.07)
Honesty mentioned (0/1)					1.10
					(0.94, 1.29)
Game order (0 = Self first)					1.04
					(0.98, 1.10)
Treatment: Control		1.01	1.01	1.00	1.00
		(0.95, 1.07)	(0.95, 1.08)	(0.94, 1.07)	(0.94, 1.07)
Treatment: LG		0.96	0.90	0.85	0.83
		(0.72, 1.28)	(0.66, 1.21)	(0.49, 1.49)	(0.47, 1.45)
Constant	0.84**	0.87†	0.79**	0.81*	0.79*
	(0.74, 0.95)	(0.75, 1.01)	(0.67, 0.92)	(0.66, 0.98)	(0.65, 0.96)
N People	932	890	723	602	589
N Sites	15	15	13	12	12

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.
† p<.1; * p<.05; ** p<.01; *** p<.001

Tab. S8. Odds Ratios with 95% CIs for the LOCAL vs. DISTANT RAG. Coefficients represent allocations to the DISTANT cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	1.16* (1.03, 1.30)	1.15* (1.02, 1.30)	1.15* (1.01, 1.32)	1.22* (1.03, 1.45)	1.22* (1.03, 1.46)
LG Pun-Mon			1.04 (0.94, 1.15)	0.99 (0.87, 1.12)	1.00 (0.88, 1.13)
MG Normative index				1.01 (0.97, 1.05)	1.01 (0.97, 1.05)
LG Normative index				1.02 (0.98, 1.06)	1.01 (0.97, 1.05)
MG Reward				0.96 (0.84, 1.09)	0.98 (0.86, 1.12)
LG Reward				1.01 (0.89, 1.14)	1.00 (0.88, 1.13)
Age centered		1.01 (0.98, 1.04)	1.02 (0.98, 1.06)	1.03 (0.99, 1.07)	1.03 (0.99, 1.07)
Sex (1 = Males)		1.02 (0.97, 1.07)	1.02 (0.97, 1.08)	1.04 (0.98, 1.10)	1.05 (0.98, 1.12)
Education centered		1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)
Children		1.00 (0.98, 1.01)	0.99 (0.98, 1.01)	0.99 (0.98, 1.01)	0.99 (0.98, 1.01)
Household size		0.99* (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)
Material insecurity		1.04 (0.97, 1.11)	1.09* (1.01, 1.18)	1.13** (1.03, 1.23)	1.12* (1.02, 1.23)
Local closeness				0.99 (0.96, 1.02)	1.00 (0.96, 1.03)
Distant closeness				0.98 (0.96, 1.01)	0.98 (0.95, 1.00)
Distant similarity				0.99 (0.96, 1.02)	0.99 (0.96, 1.02)
Police evaluation				1.00 (0.97, 1.04)	1.00 (0.97, 1.03)
Honesty mentioned (0/1)					0.92 (0.78, 1.08)
Game order (0 = Self first)					1.04 (0.98, 1.11)
Treatment: Control		0.97 (0.91, 1.03)	0.94† (0.88, 1.00)	0.94† (0.88, 1.00)	0.93* (0.86, 0.99)
Treatment: LG		0.84 (0.63, 1.13)	0.79 (0.58, 1.07)	0.92 (0.52, 1.62)	0.87 (0.49, 1.53)
Constant	0.89† (0.78, 1.00)	0.95 (0.82, 1.10)	0.94 (0.80, 1.10)	0.94 (0.77, 1.15)	0.92 (0.75, 1.13)
N People	927	885	719	598	585
N Sites	15	15	13	12	12

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.
† p<.1; * p<.05; ** p<.01; *** p<.001

Tab. S9. Beta-Estimates with 95% CI for the SELF vs. DISTANT DG. Coefficients represent allocations to the DISTANT cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	0.81*	0.69†	0.62	1.25*	1.00†
	(0.13, 1.50)	(-0.01, 1.40)	(-0.24, 1.47)	(0.25, 2.24)	(-0.06, 2.06)
LG Pun-Mon			0.18	0.57	0.46
			(-0.38, 0.73)	(-0.13, 1.28)	(-0.30, 1.22)
MG Normative index				-0.20*	-0.06
				(-0.39, -0.004)	(-0.26, 0.13)
LG Normative index				-0.06	-0.04
				(-0.27, 0.14)	(-0.25, 0.18)
MG Reward				-0.49	-0.18
				(-1.13, 0.15)	(-0.83, 0.47)
LG Reward				-0.63†	-0.37
				(-1.32, 0.06)	(-1.08, 0.34)
Age centered		0.11	0.09	0.08	0.15
		(-0.10, 0.31)	(-0.14, 0.31)	(-0.16, 0.32)	(-0.09, 0.40)
Sex (1 = Males)		0.25	0.16	0.08	-0.02
		(-0.06, 0.56)	(-0.18, 0.49)	(-0.27, 0.44)	(-0.38, 0.35)
Education centered		-0.01	-0.01	-0.01	-0.01
		(-0.05, 0.04)	(-0.06, 0.04)	(-0.07, 0.04)	(-0.07, 0.04)
Children		-0.02	-0.03	-0.04	-0.03
		(-0.10, 0.06)	(-0.11, 0.06)	(-0.13, 0.05)	(-0.12, 0.06)
Household size		-0.01	0.00	0.01	0.01
		(-0.06, 0.05)	(-0.06, 0.06)	(-0.04, 0.07)	(-0.05, 0.07)
Material insecurity		0.20	0.30	0.35	0.30
		(-0.23, 0.63)	(-0.19, 0.78)	(-0.17, 0.87)	(-0.25, 0.86)
Distant closeness				0.11	0.08
				(-0.02, 0.25)	(-0.06, 0.23)
Distant similarity				-0.03	0.01
				(-0.21, 0.15)	(-0.18, 0.19)
Police evaluation				0.01	0.01
				(-0.16, 0.17)	(-0.16, 0.17)
SELF vs. DISTANT first					0.34
					(-0.09, 0.77)
DISTANT vs. OUTGROUP first					-0.21
					(-0.77, 0.35)
SELF vs. OUTGROUP first					0.17
					(-0.38, 0.73)
Honesty mentioned (0/1)					0.28
					(-0.58, 1.15)
Did RAG (0/1)					-0.17
					(-1.29, 0.96)
Treatment: Control		-0.26	-0.22	-0.09	-0.17
		(-0.69, 0.16)	(-0.65, 0.21)	(-0.54, 0.37)	(-0.63, 0.30)
Treatment: LG		-0.62**	-0.62*	-0.64*	-0.69**
		(-1.09, -0.15)	(-1.10, -0.13)	(-1.16, -0.13)	(-1.19, -0.19)
Treatment: SA		-0.46†	-0.43	-0.42	-0.63†
		(-1.00, 0.08)	(-0.98, 0.11)	(-0.98, 0.15)	(-1.26, 0.004)
Constant	4.00***	4.27***	4.26***	4.43***	4.08***
	(3.27, 4.73)	(3.36, 5.17)	(3.26, 5.26)	(3.24, 5.62)	(2.84, 5.31)
N People	1,126	1,076	914	802	674
N Sites	10	10	10	9	8

Notes: MG = Moralizing Gods; LG = Local Gods; SA = Secular Authority; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.
† p<.1; * p<.05; ** p<.01; *** p<.001

Tab. S10. Beta-Estimates with 95% CIs for the LOCAL vs. DISTANT DG. Coefficients represent allocations to the DISTANT cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	0.63*	0.69*	0.89*	0.89*	0.56
	(0.07, 1.19)	(0.11, 1.27)	(0.18, 1.59)	(0.07, 1.70)	(-0.34, 1.45)
LG Pun-Mon			-0.17	-0.04	0.14
			(-0.62, 0.28)	(-0.62, 0.54)	(-0.50, 0.78)
MG Normative index				0.01	0.04
				(-0.15, 0.16)	(-0.12, 0.21)
LG Normative index				-0.01	0.07
				(-0.18, 0.16)	(-0.11, 0.25)
MG Reward				-0.27	0.08
				(-0.80, 0.25)	(-0.47, 0.63)
LG Reward				-0.25	-0.19
				(-0.82, 0.32)	(-0.79, 0.41)
Age centered		0.10	0.11	0.17†	0.10
		(-0.07, 0.27)	(-0.08, 0.29)	(-0.03, 0.36)	(-0.11, 0.31)
Sex (1 = Males)		0.29*	0.19	0.16	0.17
		(0.04, 0.55)	(-0.08, 0.47)	(-0.13, 0.46)	(-0.14, 0.48)
Education centered		0.00	0.01	-0.01	0.01
		(-0.04, 0.04)	(-0.04, 0.04)	(-0.05, 0.04)	(-0.04, 0.05)
Children		-0.01	-0.03	-0.04	-0.03
		(-0.08, 0.05)	(-0.10, 0.04)	(-0.12, 0.03)	(-0.11, 0.04)
Household size		0.04	0.04†	0.06*	0.05*
		(-0.01, 0.08)	(-0.01, 0.09)	(0.01, 0.10)	(0.01, 0.10)
Material insecurity		-0.15	-0.16	-0.10	-0.12
		(-0.50, 0.20)	(-0.56, 0.24)	(-0.53, 0.33)	(-0.59, 0.35)
Local closeness				-0.15*	-0.16*
				(-0.28, -0.01)	(-0.31, -0.02)
Distant closeness				0.14*	0.15*
				(0.01, 0.26)	(0.01, 0.28)
Distant similarity				-0.07	-0.08
				(-0.21, 0.08)	(-0.23, 0.07)
Police evaluation				-0.08	-0.06
				(-0.22, 0.05)	(-0.21, 0.08)
SELF vs. DISTANT first					0.09
					(-0.27, 0.45)
DISTANT vs. OUTGROUP first					-0.06
					(-0.54, 0.41)
SELF vs. OUTGROUP first					-0.12
					(-0.59, 0.35)
Honesty mentioned (0/1)					0.19
					(-0.52, 0.91)
Did RAG (0/1)					0.42
					(-0.52, 1.37)
Treatment: Control		-0.04	-0.11	-0.04	0.02
		(-0.39, 0.31)	(-0.46, 0.24)	(-0.41, 0.33)	(-0.38, 0.41)
Treatment: LG		-0.27	-0.31	-0.32	-0.35
		(-0.65, 0.11)	(-0.71, 0.08)	(-0.74, 0.10)	(-0.77, 0.07)
Treatment: SA		-0.30	-0.34	-0.18	-0.43
		(-0.75, 0.14)	(-0.78, 0.11)	(-0.64, 0.28)	(-0.96, 0.10)
Constant	3.34***	2.98***	3.01***	3.54***	3.00***
	(2.74, 3.94)	(2.24, 3.72)	(2.19, 3.82)	(2.50, 4.58)	(1.89, 4.10)
N People	1,115	1,066	904	792	664
N Sites	10	10	10	9	8

Notes: MG = Moralizing Gods; LG = Local Gods; SA = Secular Authority; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.
† p<.1; * p<.05; ** p<.01; *** p<.001

Tab. S11. Models without Mauritius: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CI for the DISTANT Games. Coefficients represent allocations to the DISTANT cups.

	Random Allocation Game		Dictator Game	
	SELF vs. DISTANT	LOCAL vs. DISTANT	SELF vs. DISTANT	LOCAL vs. DISTANT
	(1)	(2)	(3)	(4)
MG Pun-Mon	1.25*	1.20*	1.02†	0.55
	(1.05, 1.49)	(1.01, 1.43)	(-0.04, 2.08)	(-0.35, 1.44)
LG Pun-Mon	1.08	1.00	0.50	0.11
	(0.95, 1.22)	(0.88, 1.14)	(-0.26, 1.25)	(-0.53, 0.75)
MG Normative index	0.98	1.01	-0.07	0.04
	(0.94, 1.02)	(0.98, 1.05)	(-0.26, 0.13)	(-0.12, 0.21)
LG Normative index	0.99	1.01	-0.04	0.08
	(0.95, 1.03)	(0.97, 1.05)	(-0.25, 0.18)	(-0.10, 0.26)
MG Reward	0.98	0.98	-0.20	0.07
	(0.87, 1.12)	(0.86, 1.11)	(-0.85, 0.45)	(-0.48, 0.62)
LG Reward	0.98	1.00	-0.36	-0.19
	(0.86, 1.11)	(0.88, 1.13)	(-1.07, 0.35)	(-0.79, 0.41)
Constant	0.80*	0.95	4.16***	3.03***
	(0.66, 0.97)	(0.78, 1.16)	(2.94, 5.38)	(1.93, 4.12)
Site	Fixed	Fixed	Fixed	Fixed
Demography	Yes	Yes	Yes	Yes
Closeness	Yes	Yes	Yes	Yes
Police eval.	Yes	Yes	Yes	Yes
Game variables	No	No	No	No
N People	589	585	674	664
N Sites	12	12	8	8

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables = game order, did RAG, and mentioned honesty.

† p<.1; * p<.05; ** p<.01; *** p<.001

3.2.2. Robustness Checks

As a first robustness check of these results, we pooled the LOCAL and SELF games together while accounting for the nesting of game-type within an individual. For the RAG, moralizing gods' punishment-monitoring effect was estimated as increasing the odds of allocation to DISTANT co-religionists by a factor of 1.25, supporting our individual-game RAG results. Likewise, for the DG, we observed a significant effect of the moralizing gods' punishment-monitoring variable, estimated to be a 1.08 increase in coin-allocation to DISTANT co-religionists (see Tab. S12).

Tab. S12. Stacked DISTANT Games: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CI. Coefficients represent allocations to the DISTANT cup.

	DISTANT Games	
	Stacked RAGs (1)	Stacked DGs (2)
MG Pun-Mon	1.25* (1.05, 1.48)	1.08* (0.23, 1.93)
LG Pun-Mon	1.03 (0.91, 1.17)	0.27 (-0.28, 0.82)
MG Normative index	1.00 (0.96, 1.03)	-0.09 (-0.23, 0.05)
LG Normative index	1.00 (0.96, 1.04)	-0.02 (-0.17, 0.14)
MG Reward	0.97 (0.86, 1.10)	-0.33 (-0.79, 0.12)
LG Reward	1.00 (0.88, 1.13)	-0.44† (-0.94, 0.05)
Game	0.91*** (0.87, 0.94)	-0.28** (-0.48, -0.08)
Constant	0.91 (0.75, 1.11)	4.24*** (3.58, 4.90)
Site	Fixed	Fixed
Treatment	Yes	Yes
Demography	Yes	Yes
Closeness	Yes	Yes
Police eval.	Yes	Yes
Game variables	No	No
N People	1,200	1,594
N Sites	12	9

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring; Game = LOCAL versus SELF. Site means are modeled as simple fixed effects with Mysore as the reference category. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables = game order and mentioned honesty are not controlled for because they remove a large portion of our sample. Note that the DG coefficients from a negative binomial model were transformed to coin allocations.
† p<.1; * p<.05; ** p<.01; *** p<.001

As a second robustness check, we analyzed the full model specification (modeling step four) with site as a random intercept for both the DISTANT RAGs and DGs, allowing us to estimate the general intercept from partially-pooled site intercepts. For the RAG, the results from generalized linear mixed-model (GLMM) with binomial family suggested consistent effects of moralizing gods' punishment-monitoring abilities on the DISTANT allocations (OR = 1.26 when playing with the SELF and OR = 1.27 when playing with LOCAL co-religionists; see Tab. S13, cf. Tab. S7-8). For the DISTANT DGs, the ratings of moralizing-gods' punishment-monitoring abilities had relatively stable effects with an estimated increase in coin-allocations to DISTANT co-religionists of 0.87 for the SELF vs. DISTANT DG and 0.82 for the LOCAL vs. DISTANT DG. These estimates represented a subtle drop for the LOCAL vs. DISTANT DG, but a substantial drop for the SELF vs. DISTANT DG, indicating that the latter effect was more variable (although the lower bounds for 95% CIs were just below zero: -0.01 and -0.08 respectively; see Tab. S13, cf. Tab. S9-10). This drop may be partially explained by the fact that to vary the site intercepts in the DG, we had to use negative binomial models, which are more conservative than the Tobit models.

Tab. S13. Multi-Level Models: Odds Ratios (RAG) and Beta-Estimates with 95% CI. Coefficients represent allocations to the DISTANT cups.

	Random Allocation Game		Dictator Game	
	SELF vs. DISTANT (1)	LOCAL vs. DISTANT (2)	SELF vs. DISTANT (3)	LOCAL vs. DISTANT (4)
MG Pun-Mon	1.26**	1.27**	0.87†	0.82†
	(1.07, 1.49)	(1.07, 1.50)	(-0.08, 1.82)	(-0.01, 1.65)
LG Pun-Mon	1.08	0.97	0.70*	-0.05
	(0.95, 1.22)	(0.86, 1.09)	(0.01, 1.38)	(-0.57, 0.48)
MG Normative index	0.97	0.99	-0.16†	0.00
	(0.94, 1.01)	(0.95, 1.03)	(-0.33, 0.001)	(-0.14, 0.15)
LG Normative index	1.00	1.02	-0.02	0.01
	(0.97, 1.04)	(0.99, 1.06)	(-0.19, 0.16)	(-0.14, 0.16)
MG Reward	0.97	0.95	-0.38	-0.23
	(0.86, 1.10)	(0.84, 1.07)	(-0.90, 0.14)	(-0.69, 0.24)
LG Reward	1.02	1.01	-0.57*	-0.29
	(0.91, 1.15)	(0.90, 1.14)	(-1.12, -0.02)	(-0.79, 0.21)
Constant	0.75**	0.94	3.73***	3.77***
	(0.62, 0.90)	(0.780, 1.14)	(3.02, 4.44)	(3.13, 4.41)
Site	Random	Random	Random	Random
Treatment	Yes	Yes	Yes	Yes
Demography	Yes	Yes	Yes	Yes
Closeness	Yes	Yes	Yes	Yes
Police eval.	Yes	Yes	Yes	Yes
Game variables	No	No	No	No
N People	602	598	802	792
N Sites	12	12	9	9

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as random effects. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables = game order and mentioned honesty are not controlled for because they remove a large portion of our sample. Note that the DG coefficients from negative binomial model were transformed to coin allocations.
† p<.1; * p<.05; ** p<.01; *** p<.001

As a third robustness check, we tested the full models (modeling step four) on a subset of our sites that adhered to the definition of DISTANT co-religionist and OUTGROUP as "anonymous non-local co-religionist" and "anonymous non-local non-co-religionist", respectively. We excluded sites which had to use ethnicity and/or lack of religious affiliation when defining DISTANT co-religionists/OUTGROUPs, namely: Hadza, Kananga, Samburu, Sursurunga, and Turkana (see Tab. S5). The DISTANT RAGs estimated odds ratios increased in comparison to models with all sites (SELF odds ratio = 1.30; LOCAL odds ratio = 1.31; see Tab. S14; cf. Tab. S7-8), as did the SELF vs. DISTANT DG coefficient (an increase to 1.87 coin-allocation), as well as the LOCAL vs. DISTANT DG coefficient (an increase to 0.96 coin-allocation; Tab. S14, cf. Tab S9-10)

Tab. S14. OUTGROUP Subset Models: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CIs for DISTANT Games. Coefficients represent allocations to the DISTANT cup.

	Random Allocation Game		Dictator Game	
	SELF vs. DISTANT	LOCAL vs. DISTANT	SELF vs. DISTANT	LOCAL vs. DISTANT
	(1)	(2)	(3)	(4)
MG Pun-Mon	1.30**	1.31**	1.87**	0.96*
	(1.09, 1.56)	(1.10, 1.57)	(0.68, 3.07)	(0.02, 1.90)
LG Pun-Mon	1.06	0.92	0.53	-0.16
	(0.92, 1.22)	(0.80, 1.06)	(-0.39, 1.45)	(-0.89, 0.57)
MG Normative index	1.00	1.00	-0.19	0.08
	(0.96, 1.04)	(0.96, 1.05)	(-0.42, 0.04)	(-0.10, 0.26)
LG Normative index	0.97	1.02	-0.11	-0.09
	(0.93, 1.01)	(0.98, 1.07)	(-0.36, 0.15)	(-0.29, 0.11)
MG Reward	1.00	0.94	-0.75†	-0.53
	(0.86, 1.16)	(0.81, 1.09)	(-1.63, 0.12)	(-1.21, 0.16)
LG Reward	0.99	1.03	-0.67	-0.20
	(0.87, 1.13)	(0.90, 1.17)	(-1.50, 0.16)	(-0.85, 0.45)
Constant	0.84	0.99	4.01***	4.03***
	(0.68, 1.04)	(0.80, 1.23)	(2.53, 5.50)	(2.79, 5.27)
Site	Fixed	Fixed	Fixed	Fixed
Treatment	Yes	Yes	Yes	Yes
Demography	Yes	Yes	Yes	Yes
Closeness	Yes	Yes	Yes	Yes
Police eval.	Yes	Yes	Yes	Yes
Game variables	No	No	No	No
N People	451	451	507	502
N Sites	7	7	5	5

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables = game order and mentioned honesty are not controlled for because they remove a large portion of our sample.
† p<.1; * p<.05; ** p<.01; *** p<.001

3.2.3. Between-Site Analyses

To test the difference in moralizing gods' punishment-monitoring effects on DISTANT RAG allocations between data-collection waves (both waves played the SELF vs. DISTANT and LOCAL vs. DISTANT RAGs), we first subset our data just to the Wave II sites (Cachoeira, Huatasani, Kananga, Mysore, Samburu, Sursurunga, Turkana). Using binomial regression, we tested the reduced and full models on the Wave II subset, revealing more variability in the punishment-monitoring effects among the Wave II sites (see Fig. S6 and Tab. S15). Examining the difference between waves with a binomial multi-level model revealed that the between-wave variability can be mostly attributed to the different behavior of participants low on moralizing gods' ratings. While in Wave I the low ratings of punishment-monitoring were associated with low allocations to DISTANT co-religionists, allocations in Wave II were more equitable across the punishment-monitoring ratings. Indeed, both the DISTANT RAGs had significantly higher intercepts in Wave II compared to Wave I (see Tab. S15 and Fig. S6). In other words, the behavior of participants scoring high on the moralizing gods scale did not change between waves; the difference is caused by Wave II participants who declared lower punishment-monitoring ratings. Since four of the Wave II sites (Kananga, Samburu, Sursurunga, and Turkana) explicitly used ethnicity when defining DISTANT co-religionists, non-believers' favorable treatment of DISTANT co-religionists in Wave II may be explained by shared ethnicity.
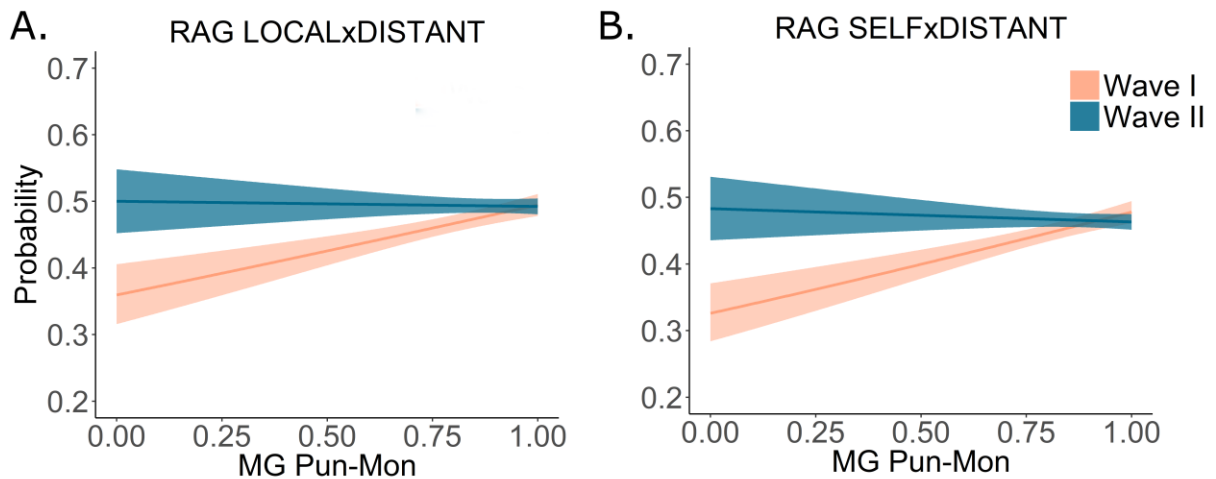
Fig. S6. Predicted Probabilities of DISTANT cup Allocations with 95% CIs for Full Models: Differences between Waves in the Effects of Moralizing Gods Punishment and Monitoring. A.-B. Different effects of MG Pun-Mon between waves in the DISTANT RAGs are driven mostly by Wave II participants scoring low on the MG Punishment-Monitoring scale (compare with CI around MG Pun-Mon = 1). Note that while for the analyses published in Tab. S15 we used hierarchical models with site as a nesting factor, here we display probabilities from the binomial regression (RAG) without accounting for nesting within sites because of possible problems with 95% CI computations. Whereas the difference between displayed plots and estimates in Tab. S15 is very small, please see Tab. S15 for exact coefficients.

Tab. S15. Wave Models: Odds Ratios with 95% CI for the DISTANT RAGs. Coefficients represent allocations to the DISTANT cup.

	Wave II: Reduced		Wave II: Full		Wave I + II: Interaction	
	SELF vs. DISTANT	LOCAL vs. DISTANT	SELF vs. DISTANT	LOCAL vs. DISTANT	SELF vs. DISTANT	LOCAL vs. DISTANT
	(1)	(2)	(3)	(4)	(5)	(6)
MG Pun-Mon	0.90	1.04	0.87	0.87	1.53***	1.37**
	(0.71, 1.14)	(0.82, 1.32)	(0.64, 1.18)	(0.64, 1.18)	(1.25, 1.88)	(1.12, 1.68)
Wave (I vs. II)	---	---	---	---	1.36*	1.32*
	---	---	---	---	(1.02, 1.83)	(1.01, 1.73)
LG Pun-Mon	---	---	1.07	1.11	1.08	0.98
	---	---	(0.86, 1.32)	(0.90, 1.37)	(0.96, 1.22)	(0.87, 1.10)
MG Normative index	---	---	0.97	1.05	0.97	0.99
	---	---	(0.91, 1.03)	(0.99, 1.13)	(0.94, 1.01)	(0.96, 1.03)
LG Normative index	---	---	0.99	0.99	1.00	1.03
	---	---	(0.93, 1.07)	(0.92, 1.06)	(0.96, 1.04)	(0.99, 1.06)
MG Reward	---	---	0.87	0.98	0.96	0.96
	---	---	(0.72, 1.06)	(0.81, 1.18)	(0.85, 1.09)	(0.85, 1.08)
LG Reward	---	---	1.01	1.09	0.99	1.00
	---	---	(0.82, 1.24)	(0.88, 1.34)	(0.88, 1.12)	(0.89, 1.12)
Wave*MG Pun-Mon	---	---	---	---	0.61**	0.79
	---	---	---	---	(0.45, 0.84)	(0.58, 1.06)
Constant	1.06	1.05	1.14	0.99	0.68***	0.82†
	(0.83, 1.35)	(0.82, 1.34)	(0.84, 1.53)	(0.73, 1.35)	(0.54, 0.84)	(0.66, 1.02)
Site	Random	Random	Random	Random	Random	Random
Demography	Yes	Yes	Yes	Yes	Yes	Yes
Closeness	No	No	Yes	Yes	Yes	Yes
Police eval.	No	No	Yes	Yes	Yes	Yes
Game variables	No	No	No	No	No	No
N People	353	349	268	264	602	598
N Sites	7	7	6	6	12	12

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring; Wave = Wave I sites vs. Wave II sites. Site means are modeled as random effects. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation; Game variables = game order and mentioned honesty.
† p<.1; * p<.05; ** p<.01; *** p<.001

3.2.4. Priming Results

To examine whether the moralizing gods' effects on behavior toward DISTANT co-religionists can be experimentally manipulated, we employed treatment methods that primed participants with moralizing gods and compared these primes to treatments with local gods and secular authority, and to the control condition. We predicted that the moralizing gods prime would lead to the largest DISTANT cup allocations (prediction #1B; note that the secular authority prime was used only at sites playing the DG). Raw means with 95% CI are displayed in Fig. S7. We modeled the treatment variable with controls for the site-specific mean allocations and demography using binomial/Tobit regressions (for the RAG and DG, respectively), and in the second step, we included an interaction between the treatment variable and the moralizing gods' punishment-monitoring score.

For DISTANT RAGs, we did not observe a difference between the moralizing gods and control conditions, but the results suggested a trend for lower allocation in the local gods condition. The odds of allocating to the DISTANT cup were on average 10% lower in the local gods prime compared to the moralizing gods prime. Furthermore, there was a trend for the Punishment-Monitoring*Treatment interaction for both the DISTANT RAGs, where the slope of the moralizing gods condition was steeper in the positive direction compared to that of the control condition. However, the intercepts of the control condition were higher compared to the intercepts of the moralizing gods condition, indicating that the latter condition spurred participants who were less committed to moralizing gods to favor the parochial cup (see Tab. S16 and Fig. S8).

The DGs revealed similar pattern: whereas the prime was associated on average with higher contributions to DISTANT co-religionists compared to the local gods and secular authority primes (differences in allocations between conditions varied from 0.22 to 0.63), this difference was small or nonexistent when compared with the control condition (see Tab. S16). Furthermore, the moralizing gods' punishment-monitoring variable moderated the treatment effects in the LOCAL vs. DISTANT DG: the moralizing gods prime increased allocations to DISTANT co-religionists for participants scoring low on the punishment-monitoring variable (see Tab. S16 and Fig. S8).

Together, these results give somewhat weak support to our prediction (#1B), possibly due a combination of several factors. First, the variety of priming techniques used across our sites (see section S2.2) may have had differential effects on the general estimate of treatment effectiveness. A previous meta-analysis has shown variability in the strength of different religious priming techniques, revealing that contextual priming has the largest effect size compared to explicit, implicit, and subliminal priming [37]. While four of our sites used contextual priming in the RAGs, there was no contextual priming used in the DGs. Second, our design necessitated the use of religious reminders on the cup labels (LOCAL and DISTANT co-religionists), plausibly priming participants in the control condition with the concept of moralizing gods. In combination with increased allocations due to the belief in moralizing gods, the allocations of participants in the control condition were very close to the equitable split. Since we did not expect the moralizing gods primes to increase allocations above the 50/50 split (in both the DG and RAG, giving half of the endowment is generally the ceiling for allocations to strangers[3,4]), the lack of difference between these conditions most likely stems from the fact that participants in both conditions reached the allocation ceiling. This interpretation is further supported by comparisons with treatments that were expected to have an opposite effect to that of the moralizing gods prime, namely the treatment with local gods and secular authority: participants in these conditions played on average below the equitable split, allowing us to observe higher allocations in the moralizing gods condition. Finally, these results provide one of the first

attempts to systematically test priming effects in small-scale, non-Western societies; hence, we cannot rule out the possibility that there may be other intervening factors influencing sensitivity to religious cues and their effect on behavior.
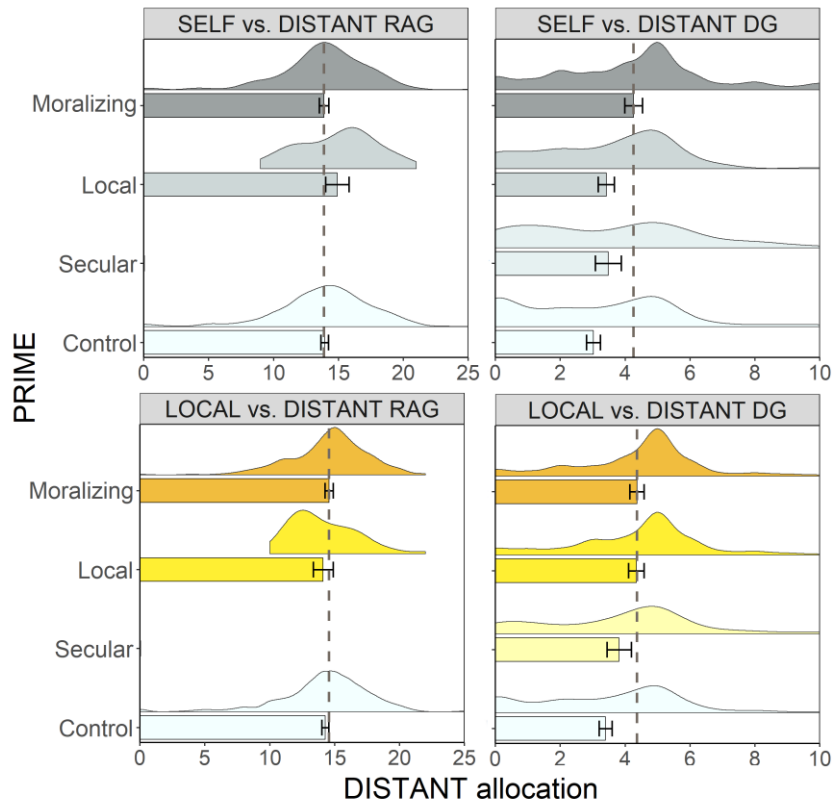
Fig S7. Raw Means with 95% CI and Density Plots and Dashed Vertical Lines Indicating the Moralizing-Gods-Prime Effect in DISTANT Allocations. Note that these effects are illustrative only and do not take into account between site differences and distributional assumptions (see Tab. S16).
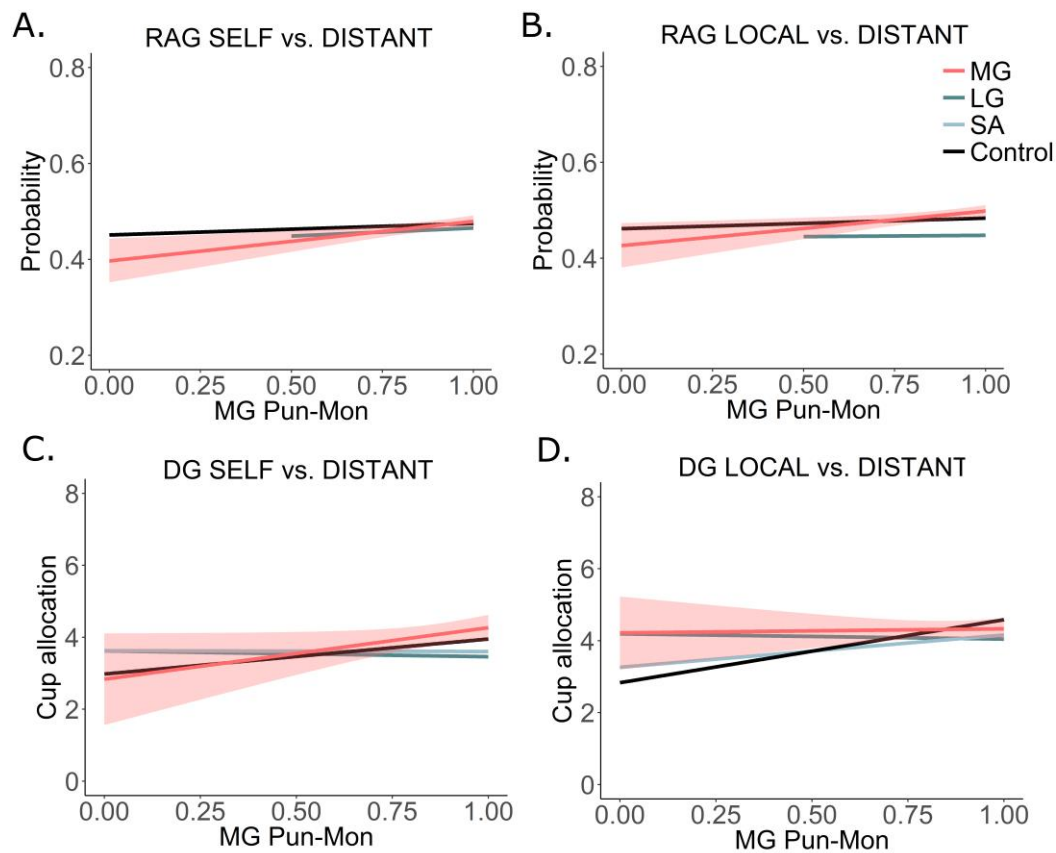
Fig. S8. Predicted Probabilities of Allocation (RAG) and Predicted Allocation (DG) to the DISTANT cup with 95% CIs for Reduced Models: Differences between Treatments in the Effects of Moralizing Gods Punishment and Monitoring. A.-D. The moralizing gods prime had no effects in the Distant vs. Outgroup RAGs and DGs, but the estimates from the Self vs. Outgroup RAGs and DGs suggest that the moralizing gods were associated with larger OUTGROUP allocations. While there were opposite trends between the moralizing gods prime and the local gods and secular authority primes, they are poorly estimated due to low sample size for MG Pun-Mon = 0. Note that we display probabilities from the binomial regression (RAG) and allocations predicted by the Tobit model (DG). To ease the interpretation, we display 95% CI for the moralizing gods prime only (our main treatment of interest).

Tab. S16. Treatment Models: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CI for the DISTANT games. Coefficients represent allocations to the DISTANT cup.

	DISTANT RAG		DISTANT RAG: Interaction		DISTANT DG		DISTANT DG: Interaction	
	SELF vs. DISTANT	LOCAL vs. DISTANT	SELF vs. DISTANT	LOCAL vs. DISTANT	SELF vs. DISTANT	LOCAL vs. DISTANT	LOCAL vs. DISTANT	SELF vs. DISTANT
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Control Prime	1.01	0.97	1.25†	1.15	-0.24	-0.02	-1.38*	0.14
	(0.96, 1.07)	(0.92, 1.03)	(0.97, 1.60)	(0.90, 1.48)	(-0.66, 0.17)	(-0.36, 0.32)	(-2.67, -0.09)	(-1.46, 1.75)
Local God Prime	0.89	0.85†	1.16	1.07	-0.63**	-0.22	-0.03	0.79
	(0.74, 1.06)	(0.70, 1.01)	(0.51, 2.62)	(0.47, 2.42)	(-1.08, -0.17)	(-0.60, 0.15)	(-1.59, 1.54)	(-1.18, 2.75)
Secular Authority Prime	---	---	---	---	-0.45	-0.29	-0.95	0.79
	---	---	---	---	(-0.99, 0.10)	(-0.73, 0.16)	(-2.71, 0.80)	(-1.41, 2.99)
MG Pun-Mon	---	---	1.40**	1.34**	---	---	0.11	1.43†
	---	---	(1.13, 1.73)	(1.08, 1.65)	---	---	(-1.03, 1.26)	(-0.01, 2.87)
Control*MG Pun-Mon	---	---	0.79†	0.82	---	---	1.64*	-0.46
	---	---	(0.60, 1.04)	(0.62, 1.08)	---	---	(0.15, 3.13)	(-2.32, 1.40)
Local God Prime* MG Pun-Mon	---	---	0.82	0.76	---	---	-0.26	-1.59
	---	---	(0.31, 2.19)	(0.29, 2.04)	---	---	(-1.99, 1.47)	(-3.76, 0.57)
Secular Authority Prime*MG Pun-Mon	---	---	---	---	---	---	0.78	-1.45
	---	---	---	---	---	---	(-1.21, 2.78)	(-3.95, 1.05)
Constant	0.98	1.05	0.72**	0.82†	4.82***	3.50***	3.48***	3.67***
	(0.87, 1.10)	(0.93, 1.17)	(0.58, 0.89)	(0.67, 1.02)	(4.08, 5.57)	(2.90, 4.11)	(2.39, 4.57)	(2.30, 5.04)
Site	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Demography	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Closeness	No	No	No	No	No	No	No	No
Police eval.	No	No	No	No	No	No	No	No
Game variables	No	No	No	No	No	No	No	No
N People	689	690	643	642	997	987	934	944
N Sites	9	9	9	9	9	9	9	9

Notes: Moralizing god prime is the reference category, hence the coefficients report differences in the DISTANT allocations between the respective treatments; MG = Moralizing God; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables = game order, did RAG, and mentioned.

† p<.1; * p<.05; ** p<.01; *** p<.001

3.3. Explaining Allocations to OUTGROUPs

3.3.1. Five Modeling Steps

For the OUTGROUP games, we pre-registered predictions that the ratings of monitoring and punitive moralizing gods would not affect allocations to the SELF (#2A) but would bias allocations toward DISTANT co-religionists (#2C) when playing with OUTGROUPs (religious parochialism). These predictions follow from the theory developed by members of our team [12], whereby cultural group selection should generally favor parochial religious cooperation, especially when competing over resources with other groups that abide by different normative structures. Previous research has shown that norms and their enforcement is geographically and temporally limited to local and recent transgressions [38], supporting the parochial nature of morality. However, with the rapid expansion of cooperative networks during past two millennia, we speculate that some normative structures may have shifted to more inclusive strategies with universally applicable norms [3]. In situations where equitable treatment of members of other groups with different supernatural commitments may expand cooperative networks and/or function as a proselytization strategy for attracting new members, group norms may incorporate the members of religious outgroups if they are not in a direct conflict over resources/ sacred values (indiscriminate prosocialiaty). Thus, we predicted that on average, our data should indicate adherence to religious parochial norms (#2A and #2C); but we also pre-registered a hypothesis that parochial norm adherence would not be observed in religions with universal appeal and active proselytization strategies (Christianity in our sample).

Testing the hypothesized null effects in the SELF vs. OUTGROUP games, we observed that the effects of moralizing gods in the RAG varied around mean odds of one, supporting our prediction #2A. While we observed the effect of punishment-monitoring in the SELF vs. DISTANT RAG, the absence of such an effect when playing with outgroup members suggest adherence to religious parochial norms. In the SELF vs. OUTGROUP DG, on the other hand, the punishment-monitoring coefficient ranged from a 0.61 to 1.23 increase in coins allocated to OUTGROUPs (see Tab. S19). These coefficients suggest a positive treatment of the OUTGROUP, albeit the lower bound of 95% CI excluded zero only when we controlled for the OUTGROUP relationship and similarity, suggesting that the moralizing gods' effect holds merely after accounting for individual favoritism/derogation of the OUTGROUP.

Furthermore, comparing the histograms of the SELF vs. OUTGROUP RAG and DG (Fig. S5) revealed that participants chose more zero allocations to OUTGROUPs in the DG compared to the RAG. While allocating zero in the RAG would suggest a severe violation of the game rules, such behavior is not against the rules of the DG. Thus, the difference between the RAG and DG in the SELF vs. OUTGROUP results indicates that in the DG, the punishment-monitoring score was associated with deterring extremely selfish behavior, whereas in the RAG, such extremely selfish behavior was not observed. Further support for these results is provided by our multi-level and subset models (see sections S3.3.2 and S3.3.3).

To probe the bias toward religious ingroups, we hypothesized that belief in moralizing gods should bias allocations to DISTANT when playing with OUTGROUP. In the RAG, the punishment-monitoring coefficients varied around mean odds of one and decreased only after accounting for OUTGROUP emotional closeness and similarity (OR = 0.90). This result indicates that pre-existing relationship with OUTGROUPS is important for understanding participants' behavior in this game (see Tab. S18). In the DISTANT vs. OUTGROUP DG, the moralizing gods' coefficient varied around a zero coin-allocation difference and, similarly to the RAG, decreased only after adding OUTGROUP closeness and similarity to the model (see Tab. S20). These results indicate that in the absence of intergroup hostility, benefiting the DISTANT at

the expense of the OUTGROUP may not be a sufficient motivation to break the rules of the RAG (most participants played close to the probability distribution), and/or that the commitment to punishing and monitoring moralizing gods does not promote resource withholding from the OUTGROUP. However, see sections S3.3.2 and S3.3.3 for results tentatively supporting religious parochialism.

Tab. S17. Odds Ratios with 95% CI for the SELF vs. OUTGROUP RAG. Coefficients represent allocations to the OUTGROUP cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	0.97	0.99	1.07	1.08	1.05
	(0.82, 1.16)	(0.83, 1.17)	(0.88, 1.30)	(0.79, 1.49)	(0.75, 1.46)
LG Pun-Mon			0.79***	0.76*	0.82†
			(0.69, 0.90)	(0.61, 0.94)	(0.66, 1.03)
MG Normative index				0.90**	0.89**
				(0.84, 0.97)	(0.82, 0.96)
LG Normative index				1.08†	1.07†
				(1.00, 1.16)	(0.99, 1.17)
MG Reward				0.88	0.91
				(0.73, 1.06)	(0.75, 1.11)
LG Reward				0.93	0.91
				(0.75, 1.17)	(0.72, 1.16)
Age centered		1.09***	1.07**	1.05	1.06†
		(1.04, 1.14)	(1.02, 1.12)	(0.98, 1.12)	(0.99, 1.13)
Sex (1 = Males)		0.99	0.98	1.01	1.01
		(0.93, 1.06)	(0.91, 1.05)	(0.91, 1.11)	(0.91, 1.12)
Education centered		1.01	1.01	1.01†	1.02*
		(1.00, 1.02)	(1.00, 1.02)	(1.00, 1.03)	(1.00, 1.03)
Children		0.98*	0.99	0.99	0.99
		(0.97, 1.00)	(0.97, 1.01)	(0.97, 1.01)	(0.96, 1.01)
Household size		1.01	1.01	1.01	1.01
		(1.00, 1.02)	(0.99, 1.02)	(0.99, 1.02)	(0.99, 1.02)
Material insecurity		1.04	1.07	1.04	1.07
		(0.95, 1.14)	(0.97, 1.19)	(0.90, 1.20)	(0.92, 1.24)
Outgroup closeness				1.06*	1.06*
				(1.01, 1.11)	(1.01, 1.12)
Outgroup similarity				1.04*	1.05*
				(1.00, 1.08)	(1.01, 1.09)
Police evaluation				1.01	1.01
				(0.96, 1.06)	(0.96, 1.06)
Honesty mentioned (0/1)					0.75
					(0.50, 1.12)
Game order (0 = Self first)					1.04
					(0.95, 1.15)
Treatment: Control		0.92*	0.91*	0.87**	0.86**
		(0.85, 1.00)	(0.84, 0.99)	(0.78, 0.96)	(0.77, 0.95)
Constant	0.99	1.03	1.19	1.30	1.26
	(0.85, 1.17)	(0.86, 1.25)	(0.96, 1.46)	(0.94, 1.79)	(0.90, 1.78)
N People	510	499	426	261	248
N Sites	9	9	8	7	7

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.
† p<.1; * p<.05; ** p<.01; *** p<.001

Tab. S18. Odds Ratios with 95% CI for the Distant vs. Outgroup RAG. Coefficients represent allocations to the OUTGROUP cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	0.98	1.00	1.01	0.90	0.90
	(0.83, 1.16)	(0.84, 1.18)	(0.83, 1.21)	(0.66, 1.24)	(0.65, 1.25)
LG Pun-Mon			0.96	1.18	1.21†
			(0.85, 1.09)	(0.94, 1.47)	(0.96, 1.52)
MG Normative index				0.87***	0.87***
				(0.81, 0.94)	(0.80, 0.94)
LG Normative index				1.02	1.03
				(0.95, 1.10)	(0.95, 1.11)
MG Reward				1.14	1.16
				(0.94, 1.38)	(0.95, 1.41)
LG Reward				1.00	0.94
				(0.80, 1.26)	(0.74, 1.19)
Age centered		0.98	0.96†	0.97	0.97
		(0.93, 1.02)	(0.91, 1.01)	(0.91, 1.04)	(0.91, 1.04)
Sex (1 = Males)		0.94†	0.92*	0.92†	0.93
		(0.88, 1.00)	(0.85, 0.99)	(0.84, 1.02)	(0.84, 1.03)
Education centered		1.00	1.00	1.01	1.01†
		(0.99, 1.01)	(0.99, 1.02)	(1.00, 1.03)	(1.00, 1.03)
Children		1.00	1.00	1.00	1.00
		(0.98, 1.02)	(0.98, 1.02)	(0.97, 1.02)	(0.97, 1.02)
Household size		1.00	1.00	0.99	0.99
		(0.99, 1.01)	(0.98, 1.01)	(0.98, 1.01)	(0.97, 1.01)
Material insecurity		0.95	0.98	0.93	0.91
		(0.86, 1.04)	(0.88, 1.08)	(0.80, 1.07)	(0.78, 1.05)
Distant closeness				0.98	0.97
				(0.94, 1.03)	(0.93, 1.01)
Distant similarity				0.98	0.99
				(0.94, 1.03)	(0.94, 1.04)
Outgroup closeness				1.04	1.04
				(0.99, 1.09)	(0.99, 1.09)
Outgroup similarity				1.05*	1.05†
				(1.00, 1.09)	(1.00, 1.09)
Police evaluation				1.02	1.03
				(0.97, 1.07)	(0.98, 1.08)
Honesty mentioned (0/1)					1.32
					(0.89, 1.95)
Game order (0 = Self first)					0.97
					(0.88, 1.07)
Treatment: Control		1	1.01	1.07	1.05
		(0.92, 1.08)	(0.93, 1.10)	(0.97, 1.19)	(0.94, 1.17)
Constant	0.93	0.91	0.95	0.94	1.01
	(0.80, 1.09)	(0.75, 1.10)	(0.77, 1.17)	(0.68, 1.29)	(0.72, 1.42)
N People	508	497	424	255	243
N Sites	9	9	8	7	7

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.
† p<.1; * p<.05; ** p<.01; *** p<.001

Tab. S19. Beta-Estimates with 95% CI for the Sᴇʟꜰ vs. Oᴜᴛɢʀᴏᴜᴘ DG. Coefficients represent allocations to the OUTGROUP cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	0.70†	0.61	0.87†	1.23*	0.80
	(-0.03, 1.43)	(-0.14, 1.35)	(-0.02, 1.75)	(0.08, 2.39)	(-0.47, 2.07)
LG Pun-Mon			-0.48†	-0.05	0.22
			(-1.06, 0.09)	(-0.88, 0.79)	(-0.70, 1.14)
MG Normative index				-0.20	-0.03
				(-0.43, 0.04)	(-0.27, 0.21)
LG Normative index				-0.09	-0.07
				(-0.34, 0.15)	(-0.33, 0.18)
MG Reward				-0.34	-0.19
				(-1.05, 0.37)	(-0.91, 0.54)
LG Reward				-0.47	-0.30
				(-1.32, 0.38)	(-1.20, 0.59)
Age centered		0.13	0.16	0.19	0.25†
		(-0.09, 0.34)	(-0.07, 0.40)	(-0.08, 0.45)	(-0.03, 0.53)
Sex (1 = Males)		0.07	-0.02	-0.19	-0.18
		(-0.25, 0.40)	(-0.37, 0.33)	(-0.61, 0.23)	(-0.61, 0.26)
Education centered		0.07**	0.07**	0.11***	0.10**
		(0.02, 0.11)	(0.02, 0.13)	(0.05, 0.18)	(0.03, 0.17)
Children		0.01	-0.02	-0.02	-0.01
		(-0.08, 0.09)	(-0.11, 0.07)	(-0.12, 0.08)	(-0.11, 0.09)
Household size		0.01	0.02	0.03	0.02
		(-0.05, 0.07)	(-0.04, 0.08)	(-0.03, 0.09)	(-0.04, 0.08)
Material insecurity		-0.08	0.11	0.15	0.08
		(-0.54, 0.38)	(-0.40, 0.62)	(-0.44, 0.74)	(-0.56, 0.71)
Outgroup closeness				0.32***	0.22*
				(0.17, 0.48)	(0.05, 0.39)
Outgroup similarity				-0.05	-0.13
				(-0.23, 0.13)	(-0.32, 0.06)
Police evaluation				0.02	0.03
				(-0.17, 0.21)	(-0.16, 0.22)
Sᴇʟꜰ vs. Dɪꜱᴛᴀɴᴛ first					0.34
					(-0.14, 0.83)
Dɪꜱᴛᴀɴᴛ vs. Oᴜᴛɢʀᴏᴜᴘ first					0.16
					(-0.55, 0.87)
Sᴇʟꜰ vs. Oᴜᴛɢʀᴏᴜᴘ first					0.53
					(-0.15, 1.21)
Honesty mentioned (0/1)					0.78
					(-0.16, 1.72)
Did RAG (0/1)					0.74
					(-1.22, 2.71)
Treatment: Control		-0.40†	-0.36	-0.14	-0.26
		(-0.84, 0.04)	(-0.80, 0.09)	(-0.65, 0.37)	(-0.78, 0.26)
Treatment: LG		-0.70**	-0.72**	-0.69*	-0.73*
		(-1.19, -0.22)	(-1.22, -0.22)	(-1.31, -0.08)	(-1.31, -0.14)
Treatment: SA		-0.76**	-0.78**	-0.19	-0.58
		(-1.33, -0.20)	(-1.34, -0.21)	(-0.84, 0.46)	(-1.34, 0.19)
Constant	3.74***	3.37***	3.55***	2.65***	2.55***
	(2.97, 4.51)	(2.42, 4.32)	(2.52, 4.58)	(1.29, 4.02)	(1.10, 3.99)
N People	1,120	1,070	908	636	513
N Sites	10	10	10	8	7

Notes: MG = Moralizing Gods; LG = Local Gods; SA = Secular Authority; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.

† p<.1; * p<.05; ** p<.01; *** p<.001

Tab. S20. Beta-Estimates with 95% CI for the Dɪsᴛᴀɴᴛ vs. Oᴜᴛɢʀᴏᴜᴘ DG. Coefficients represent allocations to the OUTGROUP cup.

	Model				
	(1)	(2)	(3)	(4)	(5)
MG Pun-Mon	0.04	0.09	0.43	-0.33	-0.36
	(-0.62, 0.71)	(-0.57, 0.76)	(-0.27, 1.13)	(-1.20, 0.54)	(-1.33, 0.61)
LG Pun-Mon			-0.98***	-0.37	-0.86*
			(-1.43, -0.53)	(-1.00, 0.25)	(-1.54, -0.17)
MG Normative index				-0.01	0.09
				(-0.19, 0.16)	(-0.10, 0.27)
LG Normative index				-0.07	-0.04
				(-0.25, 0.11)	(-0.23, 0.15)
MG Reward				0.03	0.01
				(-0.50, 0.57)	(-0.54, 0.55)
LG Reward				0.52	0.89**
				(-0.12, 1.16)	(0.22, 1.56)
Age centered		0.15	0.15†	0.16	0.22*
		(-0.04, 0.33)	(-0.03, 0.34)	(-0.04, 0.36)	(0.01, 0.43)
Sex (1 = Males)		-0.07	-0.05	-0.06	0.16
		(-0.34, 0.20)	(-0.32, 0.22)	(-0.37, 0.26)	(-0.16, 0.48)
Education centered		0.00	0.00	0.01	0.01
		(-0.04, 0.04)	(-0.04, 0.04)	(-0.04, 0.05)	(-0.04, 0.06)
Children		-0.03	-0.03	-0.02	-0.06
		(-0.10, 0.04)	(-0.10, 0.04)	(-0.10, 0.05)	(-0.13, 0.02)
Household size		0.02	0.02	0.03	0.03
		(-0.02, 0.07)	(-0.03, 0.07)	(-0.02, 0.07)	(-0.02, 0.07)
Material insecurity		-0.07	-0.07	0.10	0.01
		(-0.47, 0.32)	(-0.47, 0.33)	(-0.34, 0.55)	(-0.46, 0.48)
Distant closeness				0.13*	0.13†
				(0.01, 0.26)	(-0.004, 0.26)
Distant similarity				-0.19*	-0.09
				(-0.36, -0.03)	(-0.26, 0.07)
Outgroup closeness				0.01	-0.02
				(-0.11, 0.14)	(-0.15, 0.12)
Outgroup similarity				0.05	0.01
				(-0.09, 0.18)	(-0.13, 0.15)
Police evaluation				-0.06	-0.01
				(-0.20, 0.08)	(-0.15, 0.14)
Sᴇʟꜰ vs. Dɪsᴛᴀɴᴛ first					0.15
					(-0.21, 0.52)
Dɪsᴛᴀɴᴛ vs. Oᴜᴛɢʀᴏᴜᴘ first					-0.33
					(-0.86, 0.21)
Sᴇʟꜰ vs. Oᴜᴛɢʀᴏᴜᴘ first					0.02
					(-0.49, 0.53)
Honesty mentioned (0/1)					0.86*
					(0.15, 1.58)
Did RAG (0/1)					2.18**
					(0.58, 3.79)
Treatment: Control		-0.03	0.01	-0.04	-0.01
		(-0.38, 0.31)	(-0.34, 0.36)	(-0.42, 0.33)	(-0.40, 0.37)
Treatment: LG		-0.32†	-0.32	-0.30	-0.26
		(-0.71, 0.06)	(-0.71, 0.07)	(-0.77, 0.16)	(-0.70, 0.18)
Treatment: SA		-0.21	-0.22	-0.18	-0.07
		(-0.66, 0.23)	(-0.66, 0.22)	(-0.67, 0.30)	(-0.64, 0.50)
Constant	4.92***	4.89***	5.33***	4.75***	4.55***
	(4.27, 5.58)	(4.11, 5.68)	(4.52, 6.13)	(3.71, 5.79)	(3.45, 5.66)
N People	967	935	888	630	508
N Sites	9	9	9	8	7

Notes: MG = Moralizing Gods; LG = Local Gods; SA = Secular Authority; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category.

3.3.2. Robustness Checks

We analyzed the full-model specification (modeling step four) with site as a random intercept to benchmark our modeling technique (second robustness check). The binomial multi-level models for the OUTGROUP RAGs revealed that the effects were estimated very close to the odds of one (0.97 and 0.96, respectively), corresponding to the fixed-effects models (Tab. S21; cf. Tab. S17-18).

Similarly, in the SELF vs. OUTGROUP DG, the GLMM estimated moralizing gods' punishment-monitoring coefficient to be an increase of 1.11 coin-allocation, providing support for the estimate observed in the Tobit regression (cf. Tab. S19). In the DISTANT vs. OUTGROUP DG, the result of negative binomial multi-level model implied participants' impartiality in money division between the DISTANT co-religionist and OUTGROUPs (see Tab. S21; cf. Tab. S20).

Tab. S21. Multi-Level Models: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CI for the OUTGROUP Games. Coefficients represent allocations to the OUTGROUP cups.

	Random Allocation Game		Dictator Game	
	SELF vs. OUTGROUP (1)	DISTANT vs. OUTGROUP (2)	SELF vs. OUTGROUP (3)	DISTANT vs. OUTGROUP (4)
MG Pun-Mon	0.96	0.97	1.11*	-0.17
	(0.71, 1.29)	(0.72, 1.31)	(0.16, 2.05)	(-1.02, 0.69)
LG Pun-Mon	0.81*	1.09	0.00	-0.55†
	(0.67, 0.98)	(0.90, 1.33)	(-0.60, 0.60)	(-1.15, 0.06)
MG Normative index	0.94†	0.90**	-0.09	0.00
	(0.88, 1.01)	(0.84, 0.97)	(-0.26, 0.08)	(-0.20, 0.19)
LG Normative index	1.06	1.01	-0.06	-0.02
	(0.99, 1.15)	(0.94, 1.09)	(-0.24, 0.11)	(-0.20, 0.18)
MG Reward	0.82*	1.07	-0.28	0.03
	(0.68, 0.98)	(0.89, 1.29)	(-0.78, 0.21)	(-0.55, 0.60)
LG Reward	1.07	0.94	-0.30	0.61†
	(0.87, 1.31)	(0.77, 1.15)	(-0.87, 0.28)	(-0.08, 1.30)
Constant	1.23	1.10	3.28***	4.47***
	(0.92, 1.64)	(0.82, 1.47)	(2.58, 3.98)	(3.86, 5.09)
Site	Random	Random	Random	Random
Treatment	Yes	Yes	Yes	Yes
Demography	Yes	Yes	Yes	Yes
Closeness	Yes	Yes	Yes	Yes
Police eval.	Yes	Yes	Yes	Yes
Game variables	No	No	No	No
N People	261	255	635	630
N Sites	7	7	8	8

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as random effects. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables (game order and mentioned honesty) are not controlled for because they remove a large portion of our sample. Note that the DG coefficients from a negative binomial model were transformed to coin allocations.
† p<.1; * p<.05; ** p<.01; *** p<.001

To account for the heterogeneity in the definition of distant communities across our sites, we also tested the OUTGROUP RAG and DG full models on a subset of sites that adhered to a religious definition of DISTANT co-religionists and OUTGROUPs (third robustness check). Looking at the SELF vs. OUTGROUP games, we observed similar trends as in the analyses of the full sample. In the RAG, the moralizing gods' punishment-monitoring score predicted an increase in odds ratio of 1.23, although the 95% CI were imprecise. In the SELF vs. OUTGROUP DG, we observed and increase of 1.60 coins allocation to OUTGROUPs.

For the DISTANT vs. OUTGROUP games, subsetting our sites yielded stronger support for our hypothesis #2C compared to the full sample models: we observed a substantially smaller coefficient in the DISTANT vs. OUTGROUP RAG (OR = 0.83), although this effect is limited by a small sample size and wide 95% CI. Our analyses revealed a similar trend in the DISTANT vs. OUTGROUP DG, where the coefficient of moralizing gods dropped to -0.91 coin allocations and most of the probability mass was below zero (95% CI = [-1.89, 0.08]; see Tab. S22). These results suggest that participants committed to moralizing gods preferred DISTANT co-religionists over OUTGROUPs when those groups were defined solely along religious boundaries, excluding possible positive/negative relationships originating from inter-ethnic interactions.

Tab. S22. OUTGROUP Subset Models: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CI for the OUTGROUP Games. Coefficients represent allocations to the OUTGROUP cup.

	Random Allocation Game		Dictator Game	
	SELF vs. OUTGROUP	DISTANT vs. OUTGROUP	SELF vs. OUTGROUP	DISTANT vs. OUTGROUP
	(1)	(2)	(3)	(4)
MG Pun-Mon	1.23	0.83	1.60*	-0.91†
	(0.84, 1.80)	(0.57, 1.21)	(0.12, 3.08)	(-1.89, 0.08)
LG Pun-Mon	0.66*	0.99	0.10	0.10
	(0.47, 0.92)	(0.70, 1.41)	(-1.06, 1.25)	(-0.67, 0.88)
MG Normative index	0.96	0.96	-0.23	0.04
	(0.86, 1.06)	(0.86, 1.07)	(-0.53, 0.06)	(-0.16, 0.24)
LG Normative index	1.00	0.94	-0.03	-0.13
	(0.89, 1.13)	(0.83, 1.06)	(-0.35, 0.28)	(-0.34, 0.08)
MG Reward	0.67**	1.30	-0.46	0.52
	(0.49, 0.90)	(0.94, 1.79)	(-1.48, 0.57)	(-0.18, 1.21)
LG Reward	1.16	0.95	-0.83	0.32
	(0.86, 1.57)	(0.71, 1.28)	(-1.91, 0.25)	(-0.40, 1.04)
Constant	1.32	1.42	1.92*	4.92***
	(0.86, 2.04)	(0.90, 2.25)	(0.19, 3.66)	(3.74, 6.11)
Site	Fixed	Fixed	Fixed	Fixed
Treatment	Yes	Yes	Yes	Yes
Demography	Yes	Yes	Yes	Yes
Closeness	Yes	Yes	Yes	Yes
Police eval.	Yes	Yes	Yes	Yes
Game variables	No	No	No	No
N People	111	109	340	338
N Sites	3	3	5	5

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables (game order and mentioned honesty) are not controlled for because they remove a large portion of our sample.
† p<.1; * p<.05; ** p<.01; *** p<.001

3.3.3. Between-Site Analyses

To account for expected heterogeneity among our sites in the effects of moralizing gods on OUTGROUP allocations, we pre-registered a hypothesis that the ratings of moralizing gods at Christian sites would mitigate religious parochialism due to this religion's emphasis on impartiality and tendency to use resource allocations to strangers as one of its proselytization strategies [12,39]. Using site as a random intercept in the binomial (RAGs) and negative binomial (DGs) multi-level models, we interacted a binary variable 'Christian/non-Christian site' with the moralizing gods' punishment-monitoring variable. The Christian sites in our sample were Cachoeira, Coastal Tanna, Huatasani, Kananga, Marajó, Samburu, Sursurunga, Turkana, and Yasawa; and the non-Christian sits were Hadza, Inland Tanna, Lovu, Mauritius, Mysore, and Tyva Republic.

We observed different effects for the SELF vs. OUTGROUP and DISTANT vs. OUTGROUP games: in the former games, participants rating moralizing gods as punitive and omniscient exhibited similar positive trends in allocations to OUTGROUPs at both Christian and non-Christian sites. On the contrary, the results of the DISTANT vs. OUTGROUP RAG and DG indicated that while participants committed to the Christian God approached equitable allocations between DISTANT and OUTGROUP, participants committed to moralizing gods at non-Christian sites tended to prefer DISTANT co-religionists (see Tab. S23). Specifically, punishment-monitoring had negative effects on OUTGROUP allocations at non-Christian sites because non-committed participants were impartial about DISTANT co-religionists and OUTGROUPs but participants committed to moralizing gods preferred DISTANT co-religionists (corresponding to our prediction #2C). At Christian sites, on the other hand, we observed a tendency for an equitable split across the full spectrum of the moralizing gods' score in the DG, and a positive slope achieving an equitable split for the most committed participants in the RAG (corresponding to our hypothesis). See Fig. S9 for differences in slopes between Christian and non-Christian sites.

However, these conclusions are weakened by several facts. First, the Cachoeira and Huatasani sites used Evangelical Christians as OUTGROUPs (while Catholic Christians were LOCAL co-religionists), possibly biasing the coefficient in positive directions given the similarity of these two belief sets. Furthermore, the intercept of the punishment-monitoring score was poorly estimated at Christian sites (most of the participants scored high on moralizing gods' ratings), producing substantial interval breadth of the interaction estimate (see Tab. S23). Nevertheless, the fact that the Christian and non-Christian sites exhibited opposite effects for the punishment-monitoring variable can help explain why we did not observe the hypothesized bias against the OUTGROUPs in the DISTANT vs. OUTGROUP RAGs and DGs (see Tab. S17 and S20). Finally, using adherence to Christian God as a binary, site-level variable misses important historical and geographical variation in the emphasis on universal norms and proselytization between our Christian sites, and individual-level measures focused on these aspects are needed to provide further support for our preliminary conclusions. Future research should also replicate these findings with other religions that emphasize universal morality and proselytize (e.g. Islam).
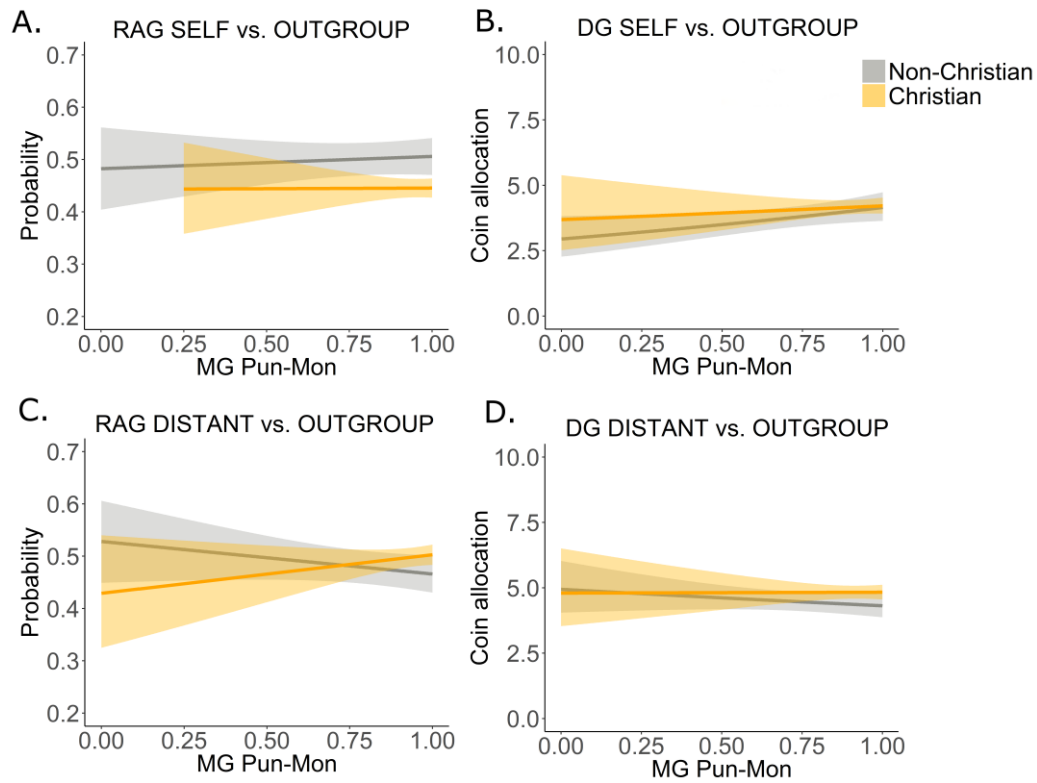
Fig. S9. Predicted Probabilities of Allocation (RAG) and Predicted Allocation (DG) to the OUTGROUP cup with 95% CIs for Full Models: Differences between Christian and Non-Christian Sites in the Effects of Moralizing Gods Punishment and Monitoring. A.-D. The number of participants scoring zero on the punishment-monitoring scale is extremely low or missing at Christian sites, biasing the estimate of the Christianity effects in the OUTGROUP RAGs and the OUTGROUP DGs. However, we observe opposite effects in Christian and non-Christian sites in the DISTANT games. Note that while for the analyses published in Tab. S23 we used hierarchical models with site as a nesting factor, here we display probabilities from the binomial regression (RAG) and transformed estimates from the negative binomial regression (DG) without accounting for nesting within sites because of possible problems with 95% CI computations. Whereas the difference between displayed plots and estimates in Tab. S23 is very small, please see Tab. S23 for exact coefficients.

Tab. S23. Christianity Models: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CI for the OUTGROUP Games. Coefficients represent allocations to the OUTGROUP cup.

	Random Allocation Game		Dictator Game	
	SELF vs. OUTGROUP (1)	DISTANT vs. OUTGROUP (2)	SELF vs. OUTGROUP (3)	DISTANT vs. OUTGROUP (4)
MG Pun-Mon	1.11	0.78	1.27*	-0.57
	(0.77, 1.59)	(0.54, 1.12)	(0.08, 2.46)	(-1.61, 0.48)
Christ (0/1)	0.93	0.67	0.78	-0.13
	(0.54, 1.61)	(0.40, 1.12)	(-0.78, 2.35)	(-1.68, 1.43)
LG Pun-Mon	0.76**	1.13	0.01	-0.39
	(0.62, 0.92)	(0.92, 1.39)	(-0.58, 0.61)	(-1.03, 0.26)
MG Normative index	0.94†	0.89**	-0.08	-0.01
	(0.87, 1.01)	(0.82, 0.95)	(-0.25, 0.08)	(-0.20, 0.18)
LG Normative index	1.06	1.01	-0.06	-0.02
	(0.99, 1.15)	(0.94, 1.09)	(-0.23, 0.10)	(-0.21, 0.17)
MG Reward	0.81*	1.07	-0.30	0.09
	(0.68, 0.97)	(0.90, 1.29)	(-0.77, 0.18)	(-0.50, 0.68)
LG Reward	1.01	0.96	-0.28	0.66†
	(0.82, 1.25)	(0.78, 1.19)	(-0.83, 0.27)	(-0.03, 1.36)
Christ*MG Pun-Mon	0.87	1.73*	-0.59	0.68
	(0.49, 1.53)	(1.00, 2.98)	(-2.02, 0.84)	(-1.26, 2.62)
Constant	1.29	1.29	3.11***	4.45***
	(0.92, 1.83)	(0.89, 1.85)	(2.35, 3.86)	(3.80, 5.11)
Site	Random	Random	Random	Random
Demography	Yes	Yes	Yes	Yes
Closeness	Yes	Yes	Yes	Yes
Police eval.	Yes	Yes	Yes	Yes
Game variables	No	No	No	No
N People	261	255	636	630
N Sites	7	7	8	8

Notes: MG = Moralizing Gods; LG = Local Gods; Pun-Mon = Punishment-Monitoring; Christ = Non-Christian sites vs. Christian sties. Site means are modeled as random effects. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables = game order, did RAG, and mentioned honesty. Note that the DG coefficients from a negative binomial model were transformed to coin allocations.
† p<.1; * p<.05; ** p<.01; *** p<.001

3.3.4. Priming Analyses

As a last step, we analyzed our experimental manipulation pertaining to the causal relationship between belief in punitive and monitoring moralizing gods and treatment of OUTGROUPs. Mirroring the predictions for our correlational analyses, we predicted that priming participants with moralizing gods would have no effect in the SELF vs. OUTGROUP RAG and DG (#2B); and that priming participants with moralizing gods would bias allocations toward DISTANT in the DISTANT vs. OUTGROUP RAG and DG compared to the other conditions (#2D). See Fig. S10 for raw means with 95% CI. We used the same modeling approach as in the DISTANT analyses.
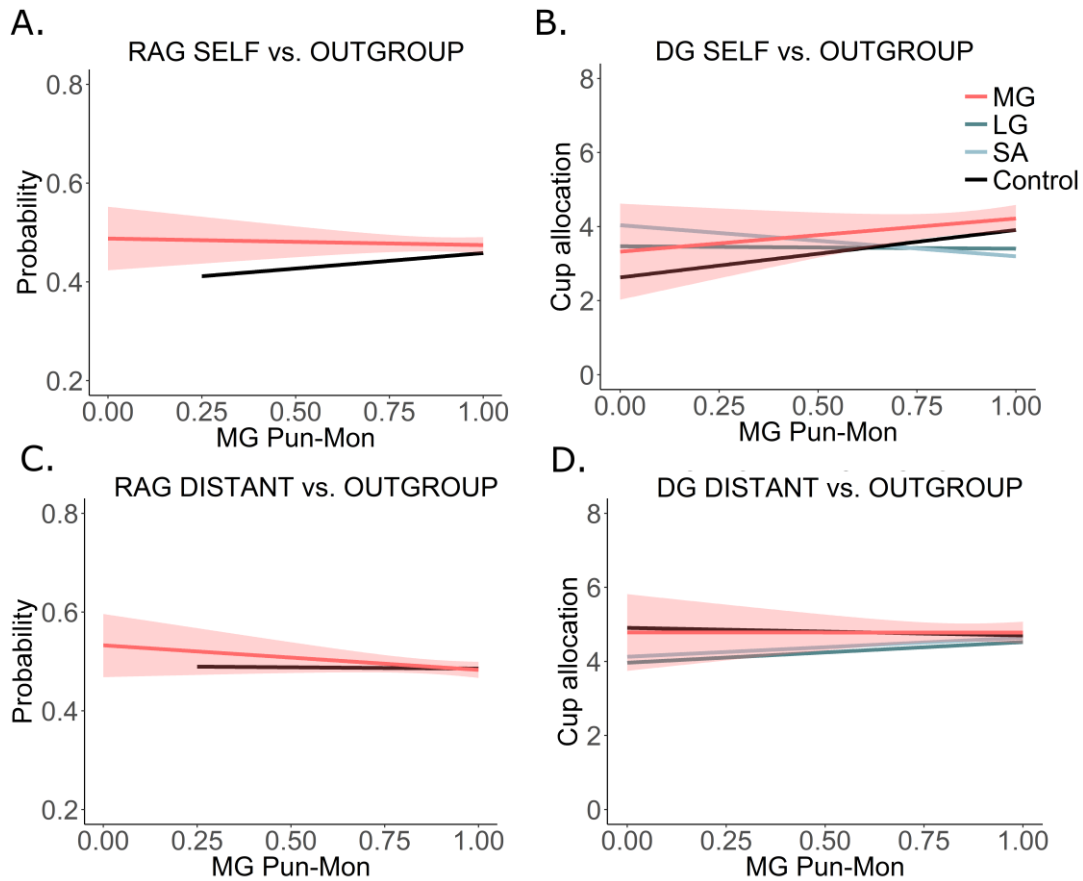
Testing the predicted null effects in the SELF vs. OUTGROUP games, we observed a main effect of the moralizing-gods treatment on allocations to OUTGROUPs in both the RAG and DG. First, in the RAG, allocating to OUTGROUPs was 10% more likely in the moralizing gods condition than in the control condition. Interestingly, we did not observe such an effect in the SELF vs. DISTANT RAG (see section S3.2.4). Comparing Fig. S8A and S11A revealed that this effect seems to be driven mostly by participants not committed to moralizing gods who treated the OUTGROUPs more equitably in the SELF vs. OUTGROUP game. In other words, participants committed to moralizing gods allocated similar amounts to DISTANT and OUTGROUPs in the two versions of the SELF RAGs, and the difference between the two RAGs was driven by increased allocations to OUTGROUPs by non-committed participants primed with moralizing gods. This poses an interesting question about the differential effects of moralizing gods primes on non-believers and their treatment of OUTGROUPs, which should be addressed in future work.

Second, in the SELF vs. OUTGROUP DG, the moralizing gods prime was estimated to increase OUTGROUP allocations by 0.36 coins compared to the control condition, an effect that almost doubled in the local gods (0.68 coin increase) and secular authority (0.75 coin increase) conditions. Analogically to the DISTANT games, local gods and secular authority were associated with self-favoritism. The effects of local gods and secular authority are also apparent in the model interacting treatment with the punishment-monitoring score where the regression slopes of the moralizing-gods and control conditions run in the opposite direction as the local gods and secular authority regression slopes (see Tab. 24 and Fig. S11B). Although not reliably estimated due to small sample sizes and variability in responses, these results suggest a fruitful area for future research.

Focusing on the DISTANT vs. OUTGROUP RAG and DG, we observed neither substantial differences between our conditions, nor an interaction between treatment and moralizing gods' punishment-monitoring score. Moreover, the coefficient direction in the DG runs contra prediction #2D, suggesting higher OUTGROUP allocations in the moralizing gods condition. While moralizing gods' punishment-monitoring ratings had variable effects on participants' behavior in the DISTANT vs. OUTGROUP RAG and DG (see Tab. S18 and Tab. S20), the results of our treatment analysis suggest that priming may have activated latent norms that apply irrespective of the identity of receivers [40,41].
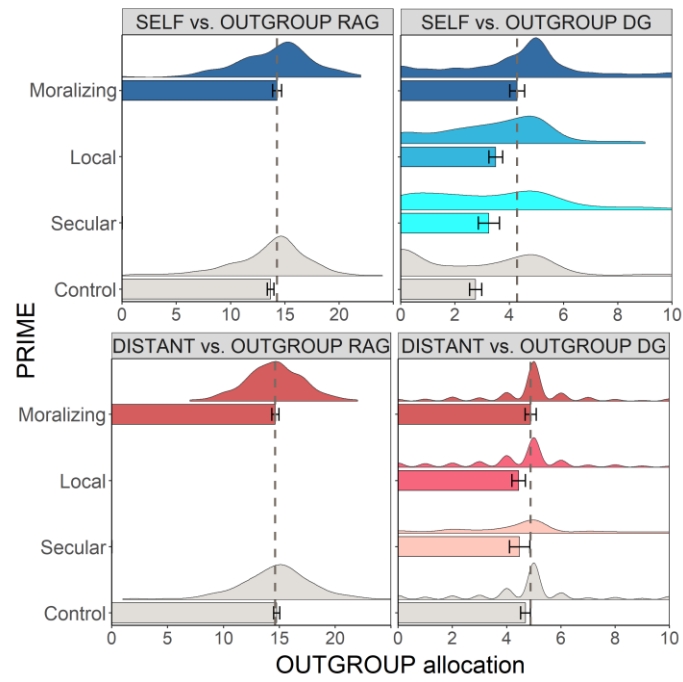
Fig S10. Raw Means with 95% CI and Density Plots and Dashed Vertical Lines Indicating the Moralizing-Gods-Prime Effect in OUTGROUP Allocations. Note that these effects are illustrative only and do not take into account between site differences and distributional assumptions (see Tab. S16).

Fig. S11. Predicted Probabilities of Allocation (RAG) and Predicted Allocation (DG) to the OUTGROUP cup with 95% CIs for Reduced Models: Differences between Treatments in the Effects of Moralizing Gods Punishment and Monitoring. A.-D. The moralizing gods prime had no effects in the Dɪsᴛᴀɴᴛ ᴠs. Oᴜᴛɢʀᴏᴜᴘ RAGs and DGs, but the estimates from the Sᴇʟғ ᴠs. Oᴜᴛɢʀᴏᴜᴘ RAGs and DGs suggest that the moralizing gods were associated with larger OUTGROUP allocations. While there were opposite trends between the moralizing gods prime and the local gods and secular authority primes, they are poorly estimated due to low sample size for MG Pun-Mon = 0. Note that we display probabilities from the binomial regression (RAG) and allocations predicted by the Tobit model (DG). To ease the interpretation, we display 95% CI only for the moralizing gods prime (our main treatment of interest).

Tab S24. Treatment Models: Odds Ratios (RAG) and Beta-Estimates (DG) with 95% CI for the OUTGROUP Games. Coefficients represent allocations to the OUTGROUP cup.

	OUTGROUP RAG		OUTGROUP RAG: Interaction		OUTGROUP DG		OUTGROUP DG: Interaction	
	SELF vs. OUTGROUP (1)	DISTANT vs. OUTGROUP (2)	SELF vs. OUTGROUP (3)	DISTANT vs. OUTGROUP (4)	SELF vs. OUTGROUP (5)	DISTANT vs. OUTGROUP (6)	SELF vs. OUTGROUP (7)	DISTANT vs. OUTGROUP (8)
Control Prime	0.91*	0.99	0.69†	0.85	-0.36†	-0.04	-0.70	0.12
	(0.84, 0.99)	(0.91, 1.08)	(0.47, 1.01)	(0.58, 1.24)	(-0.79, 0.06)	(-0.38, 0.31)	(-2.34, 0.95)	(-1.18, 1.43)
LG Prime	---	---	---	---	-0.68**	-0.36†	0.14	-0.82
	---	---	---	---	(-1.14, -0.21)	(-0.74, 0.01)	(-1.84, 2.13)	(-2.42, 0.78)
SA Prime	---	---	---	---	-0.75**	-0.22	0.71	-0.66
	---	---	---	---	(-1.31, -0.20)	(-0.68, 0.23)	(-1.44, 2.87)	(-2.38, 1.07)
MG Pun-Mon	---	---	0.95	0.82	---	---	0.9	-0.004
	---	---	(0.72, 1.26)	(0.62, 1.09)	---	---	(-0.57, 2.36)	(-1.17, 1.17)
Control*MG Pun-Mon	---	---	1.36	1.19	---	---	0.39	-0.2
	---	---	(0.89, 2.07)	(0.79, 1.82)	---	---	(-1.51, 2.28)	(-1.71, 1.31)
LG Prime*MG Pun-Mon	---	---	---	---	---	---	-0.96	0.56
	---	---	---	---	---	---	(-3.15, 1.23)	(-1.21, 2.33)
SA Prime*MG Pun-Mon	---	---	---	---	---	---	-1.74	0.52
	---	---	---	---	---	---	(-4.19, 0.72)	(-1.45, 2.48)
Constant	1.1	0.97	1.16	1.16	3.77***	4.99***	3.10***	4.96***
	(0.96, 1.26)	(0.84, 1.12)	(0.87, 1.53)	(0.87, 1.53)	(3.02, 4.53)	(4.37, 5.60)	(1.72, 4.49)	(3.86, 6.07)
Site	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Demography	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Closeness	No	No	No	No	No	No	No	No
Police eval.	No	No	No	No	No	No	No	No
Game variables	No	No	No	No	No	No	No	No
N People	312	309	312	309	991	988	938	935
N Sites	4	4	4	4	9	9	9	9

Notes: Moralizing god prime is the reference category, hence the coefficients report differences in the OUTGROUP allocations between the respective treatments. MG = Moralizing God; Pun-Mon = Punishment-Monitoring. Site means are modeled as simple fixed effects with Mysore as the reference category. Variables denoted as 'yes/no' in the lower portion of the table describe whether or not they were controlled for in the models. Demography = age, sex, number of children, size of household, material insecurity; Closeness = emotional closeness and practice similarity to local and distant co-religionists and to outgroup; Police eval. = Police evaluation. Game variables = game order, did RAG, and mentioned honesty.
† p<.1; * p<.05; ** p<.01; *** p<.001

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