

Believers' estimates of God's beliefs are more egocentric than estimates of other people's beliefs

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People often reason egocentrically about others' beliefs, using their own beliefs as an inductive guide. Correlational, experimental, and neuroimaging evidence suggests that people may be even more egocentric when reasoning about a religious agent's beliefs (e.g., God). In both nationally representative and more local samples, people's own beliefs on important social and ethical issues were consistently correlated more strongly with estimates of God's beliefs than with estimates of other people's beliefs (Studies 1–4). Manipulating people's beliefs similarly influenced estimates of God's beliefs but did not as consistently influence estimates of other people's beliefs (Studies 5 and 6). A final neuroimaging study demonstrated a clear convergence in neural activity when reasoning about one's own beliefs and God's beliefs, but clear divergences when reasoning about another person's beliefs (Study 7). In particular, reasoning about God's beliefs activated areas associated with self-referential thinking more so than did reasoning about another person's beliefs. Believers commonly use inferences about God's beliefs as a moral compass, but that compass appears especially dependent on one's own existing beliefs.

decision making | judgment | religion | social cognition | social neuroscience

Religion appears to serve as a moral compass for the vast majority of people around the world. It informs whether same-sex marriage is love or sin, whether war is an act of security or of terror, and whether abortion rights represent personal liberty or permission to murder. Many religions are centered on a god (or gods) that has beliefs and intentions, with adherents encouraged to follow “God’s will” on everything from martyrdom to career planning to voting. Within these religious systems, how do people know what their god wills?

When people try to infer other people’s attitudes and beliefs, they often do so egocentrically by using their own beliefs as an inductive guide (1). This research examines the extent to which people might also reason egocentrically about God’s beliefs. We predicted that people would be consistently more egocentric when reasoning about God’s beliefs than when reasoning about other people’s beliefs. Intuiting God’s beliefs on important issues may not produce an independent guide, but may instead serve as an echo chamber that reverberates one’s own beliefs.

The Jewish and Christian traditions state explicitly that God created man in his own image, but believers and nonbelievers alike have long argued that people seem to create God in their own image as well (2–5). Xenophanes (sixth century B.C.E.), for instance, coined the term anthropomorphism when noting the similarity between religious believers and representations of their gods, with Greek gods being fair skinned and African gods being dark skinned (6). Voltaire reports a Pope as saying, “If God made us in His own image, we have certainly returned the favor” (7). And Bob Dylan (8) sang of the ease with which groups come to believe that God is “on our side.” Egocentric representations of God are frequently discussed in public discourse, but are rarely the topic of scientific inquiry. This research examines the strength of such egocentric representations by measuring the extent to which people’s own beliefs guide their

predictions about God’s beliefs. This research does not in any way, however, deny the possibility that the inverse process of reflection (using God’s presumed beliefs as a guide to one’s own) may operate in contexts where people’s own beliefs are uncertain or unknown.

Although religious agents are attributed many unique properties, people nevertheless conceive of them in surprisingly humanlike ways (4, 9, 10). Inferences about a religious agent’s beliefs may therefore be guided by the same two sources of information used to reason about other people’s beliefs (11–15). The first source is one’s own beliefs. Conservatives, for instance, tend to assume that the average person is more conservative than do liberals (16–18). Inferences about other people’s beliefs are often based at least partly on one’s own beliefs (1, 14). The second source is semantic or episodic knowledge about the target. This knowledge may come from group-based stereotypes (e.g., Texans are conservative; Californians are liberal), from observations of behavior, or from third-person reports. It is easy to guess that Barack Obama has relatively liberal beliefs, for instance, because he is a Democrat, because he expresses liberal beliefs, and because his colleagues say he is liberal.

Religious believers can use both sources of information when reasoning about a religious agent. People can readily recall or construct their own beliefs on an issue and can also consult texts (e.g., the Koran, Torah, or Bible) or presumed experts (e.g., an Imam or Priest) that report on God’s beliefs. Like inferences about people, inferences about God’s beliefs are therefore likely to reflect a mixture of egocentric and nonegocentric information.

Unlike inferences about people, however, inferences about God’s beliefs cannot rely as readily on information directly from the judgment target. One can quiz neighbors on their beliefs, read editorials about celebrities’ positions, or observe public opinion polls. Religious agents do not lend themselves to public opinion polling. Even within Christianity, for example, groups differ quite dramatically in their interpretation of God’s attitudes toward such topics as same-sex marriage, the death penalty, and abortion. The inherent ambiguity of God’s beliefs on major issues and the extent to which religious texts may be open to interpretation and subjective evaluation, suggests not only strong egocentric biases when reasoning about God, but also that people may be consistently more egocentric when reasoning about God’s beliefs than when reasoning about other people’s beliefs. When the beliefs of a positively evaluated target are relatively ambiguous, a person may construct them by relying on his or her own beliefs (19). Indeed, it may seem particularly

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Table 1. Egocentric correlations with God and other targets from Studies 1–4

Study	Issue	N	Egocentric correlations (r self, —)				
			God	Amer.	Gates	Bush	
1	Abortion	54	0.59	—	−0.02	−0.14	
2	Same-sex marriage	37	0.72	0.41	−0.24	−0.19	Bonds −0.40
3	Abortion	22	0.63	−0.34	0.23	−0.20	
	Affirmative action	20	0.23	0.06	0.15	−0.19	
	Death penalty	19	0.35	−0.37	0.29	0.23	
	Iraq war	15	0.65	0.28	0.47	−0.23	
	Marijuana legalization	20	0.23	−0.01	−0.02	−0.17	
	Same-sex marriage	20	0.68	−0.50	0.32	−0.50	
	Overall	116	0.46	−0.17	0.23	−0.18	
4	Believers	922	God	Amer.			
	Abortion		0.59	0.47			
	Same-sex marriage		0.73	0.43			
	Nonbelievers	77	God	Amer.			
	Abortion		0.40	0.46			
	Same-sex marriage		0.44	0.34			

Amer., the Average American; Gates, Bill Gates; Bush, George W. Bush; Couric, Katie Couric; Bonds, Barry Bonds.

logical to use egocentric information when reasoning about God, because religious agents are generally presumed to hold true beliefs, and people generally presume that their own beliefs are true as well (20).

We tested this basic hypothesis that people would be especially egocentric when reasoning about God’s beliefs using correlational, experimental, and neuroimaging methods. We investigate important social and moral beliefs on which believers are likely to consider God’s beliefs more consistently, rather than more minor and idiosyncratic beliefs. Although our theoretical predictions apply to any religious or supernatural agent presumed to have beliefs (4), our experimental participants are drawn primarily from the United States and therefore cannot represent the entire corpus of world religions. The vast majority of participants from these samples also report believing in God. We exclude nonbelievers from analyses, except where we have a sufficiently large sample for independent analysis (Study 4), primarily because our hypotheses are relevant only to believers. Including the relatively small number of nonbelievers in the other studies, however, does not meaningfully alter any conclusions suggested by the following analyses.

Studies 1–4

Description. We conducted four surveys in which participants reported their own belief about an issue, and then estimated God’s belief along with a variety of other human targets’ beliefs. For more detailed materials and methods see *SI Text*. Within and across surveys (see Table 1), we selected human targets that varied on a number of dimensions known to influence the degree of egocentrism, such as likeability and ambiguity of beliefs. These targets include liked individuals with relatively unknown beliefs (e.g., Bill Gates), a generalized other (average American), disliked individuals with unknown beliefs (Barry Bonds), and an individual with well-known beliefs (George W. Bush). We expected that egocentric correlations would diminish from the first of these groups to the last, but that all would show weaker evidence of egocentrism than estimates of God’s beliefs. Of course, significant correlations between people’s own beliefs and

God’s presumed beliefs could reflect both egocentric projection onto God and the opposite (using God’s beliefs as a guide to one’s own). We reduced the impact of this reverse causality in Studies 1–3 by asking participants to report their own beliefs first and then randomly ordering the remaining targets. We demonstrate causality conclusively using experimental methods in Studies 5 and 6.

Results. In Study 1, Boston rail-commuters indicated their own, God’s, Bush’s, and Gates’ attitudes about abortion by rating agreement with six statements about the abortion debate. We formed a composite attitude-about-abortion score for every target. Using these composites, we computed an “egocentric correlation” between participants’ own attitudes and their estimates of each other target. As predicted, the egocentric correlation with God was larger than every other egocentric correlation, $Z_s > 3.8$, $P_s < 0.01$. In Study 2, undergraduates responded to a similarly structured set of items about same-sex marriage. The egocentric correlation with God’s beliefs was again larger than with every other target, $Z_s > 2.3$, $P_s < 0.05$. Study 3 extended the first two studies by examining undergraduates’ beliefs about multiple sociopolitical issues (see Table 1). Standardizing and collapsing across issues, the egocentric correlation with God’s beliefs was again larger than with every other target, $Z_s > 2.2$, $P_s < 0.05$.

Study 4 questioned adults from a nationally representative (United States) database of online respondents. Participants indicated their own, God’s, and the average American’s attitudes about abortion and same-sex marriage. The order of targets was counterbalanced, but did not significantly alter the strength of the egocentric correlations. For each issue, the egocentric correlation among religious believers ($n = 922$) was higher for God than for the average American, $Z_s > 4.0$, $P_s < 0.01$. For nonbelievers ($n = 77$), the egocentric correlation with God’s beliefs was significantly lower on both issues than for believers, both Fisher’s $Z_s > 2.0$, $P_s < 0.05$, and did not differ on either issue from the egocentric correlation with the average American, $Z_s < 1$. It is difficult to interpret these results for nonbelievers,

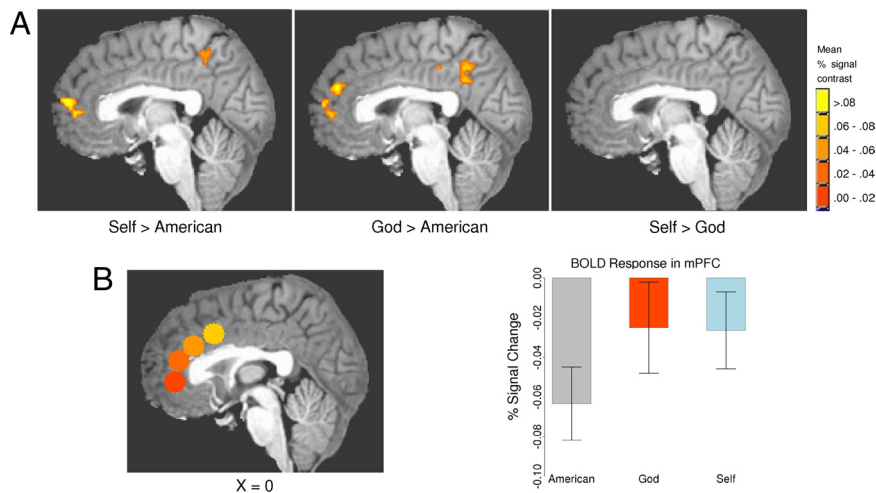


Fig. 3. Comparisons of neural activation when reasoning about self, God, and the “average American.” (A) Depicts a representative slice ($x = 0$) for the voxelwise t tests of self vs. American, God vs. American, and self vs. God contrasts. (B) Depicts the regions of interest (radius = 8 mm) spanning portions of mPFC previously identified to differentiate self-other processing.

God’s attitudes, but not consistent shifts in estimates of other people’s attitudes.

Study 7

Description. Our final research approach used fMRI to measure similarity in neural activity when reasoning about one’s own versus God’s beliefs, compared to when reasoning about another person’s beliefs, namely a specific (participant-generated) individual representing the average American. Thinking about one’s own mental states in contrast to thinking about another person’s mental states is associated with heightened activation in the medial prefrontal cortex (mPFC), precuneus, temporoparietal junction, and temporal poles (23), and the egocentric projection of one’s own mental states onto others’ is associated with heightened activation of the inferior regions of the mPFC (24). If people are indeed more egocentric when reasoning about God’s attitudes than when reasoning about other people’s attitudes, then neural activity in these regions should be more similar between self and God than between self and average American.

During fMRI scanning, 17 participants were presented with six 90-s blocks (two self, two God, two average American blocks) of 10 attitude items (e.g., legal euthanasia), each for 9 s. A pilot experiment of 18 participants using these items replicated the basic result from the preceding studies: egocentric correlations across the 20 items were calculated for each participant. Across participants, the egocentric correlation in this pilot experiment was larger for God’s attitudes ($M_{Fisher's\ z} = 0.47$) than for the Average American’s attitudes ($M_{Fisher's\ z} = 0.06$), paired- t (17) = 3.24, $P < 0.01$ (see *SI Text* and *Fig. S2* for procedural details).

Participants in the scanner reported their own attitude on each item during the self blocks, the average American’s attitude during the average American blocks, and God’s attitude during the God blocks. These blocks were separated by a fixation period of 90 s. Participants saw one of four orders of stimulus presentation, made by crossing two randomized block orders with two randomized issue orders.

Results. Voxelwise comparisons indicated that the God-American contrast and self-American contrast produced similar patterns of activation in the mPFC, medial precuneus, bilateral temporoparietal junction, right medial temporal gyrus, and left insula regions (voxelwise P s < 0.005 , corrected; *Fig. 3A*), whereas the self-God contrast produced no significant differ-

ences in these regions. We next designated four equal-volume regions of interest that covered the area within the mPFC previously associated with self and other processing (*Fig. 3B*) (23). A 3 (condition: Self, God, average American) \times 4 (mPFC region: inferior, middle inferior, middle superior, superior) repeated measures analysis of variance revealed a significant main effect for condition, $F_{(2, 32)} = 3.80$, $P = 0.033$. As illustrated in *Fig. 3B*, activity in the mPFC was lower when participants thought about the average American’s attitudes than when they thought about their own attitude or God’s attitudes (P s < 0.05), whereas activity in the mPFC did not differ between the self and God conditions. The mPFC region \times condition interaction was nonsignificant, $F < 1$ (see *SI Text*, *Figs. S3–S5*, and *Tables S2 and S3* for details about acquisition and supplemental analyses).

These results expand considerably on the behavioral results observed in Studies 1–6 by demonstrating a relative similarity in the neural substrates involved in thinking about one’s own beliefs and God’s beliefs compared to when thinking about another person’s beliefs. Combined with Studies 1–6, there is not only a stronger relationship between reports of one’s own beliefs and God’s beliefs compared to another person’s beliefs, but an increased similarity in the underlying mechanism used to generate one’s own beliefs and God’s beliefs as well. Inferences about God’s beliefs appear to egocentrically biased, these data suggest, because the process used to generate inferences about God’s beliefs is relatively similar to the process used to generate one’s own beliefs.

Discussion

Correlational, experimental, and neuroimaging methodologies all suggest that religious believers are particularly likely to use their own beliefs as a guide when reasoning about God’s beliefs compared to when reasoning about other people’s beliefs. People’s estimates of God’s beliefs were more strongly correlated with their own beliefs than were their estimates of a broad range of other people’s beliefs (Studies 1–4). Manipulating people’s own beliefs similarly affected their estimates of God’s beliefs more than it affected estimates of other people’s beliefs (Studies 5 and 6), demonstrating that estimates of God’s beliefs are causally influenced at least in part by one’s own beliefs. Finally, neuroimaging evidence demonstrated that reasoning about God’s beliefs tends to activate the same regions that are active when reasoning about one’s own beliefs (indeed, statistically indistinguishable in the whole-brain analysis),

the experimenter's request put participants into one of the four cells of a 2 (preexisting attitude: support vs. oppose) \times 2 (speech: consistent vs. inconsistent) quasi-experimental design. Those who agreed (all but five) were then asked to prepare a 2–3 min persuasive speech to deliver in front of a video camera. After \approx 10 min of preparation, participants delivered their speeches. When finished, participants indicated their "own attitude about the death penalty" on a 9-point scale ranging from 1 (completely oppose) to 9 (completely support), and then did the same (in a randomized order) for God, Bill Gates, George Bush, and the average American.

Study 7. Eighteen healthy, right-handed volunteers (8 men, 10 women; age 18 to 45 years, *Mdn* = 21 years) participated in exchange for \$40. Of these, 17 reported believing in God in a prescreening survey and are included in the analyses.

After a brief training period to familiarize participants with the experimental procedure, participants were presented during fMRI scanning with six 90-s blocks of attitude items (two each for self, God, and average American; see *SI Text*). Each block consisted of 10 attitude items presented on the viewing screen for 9 s each, with each block separated by a 90-s fixation period. During each "self" block, participants were presented for 9 s with a slide reading "My position on [attitude item]" for each of the items, and reported their attitude for each item during this period by pressing one of five response buttons on

a handheld device ranging from "completely opposed" to "completely support." This response procedure was identical for the "average American" and "God" blocks, except that the attitude items were presented on slides reading "[name]'s position on [attitude item]" and "God's position on [attitude item]," respectively. Blocks of attitude items were separated by a fixation slide presented for 84 s, followed for 6 s by the name of the target they would be evaluating in the next block (self, God, or [average American name]). Participants saw one of four versions of stimulus presentation made by crossing two orders of block presentation (randomly selected, on the condition that the same judgment target was not repeated consecutively) with two orders of trial presentation (randomly selected). See *SI Text* for additional procedural details and analyses for Study 7 and the pretest to this study.

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