



# My mind, your mind, and God's mind: How children and adults conceive of different agents' moral beliefs

Larisa Heiphetz<sup>1\*</sup>, Jonathan D. Lane<sup>2</sup>, Adam Waytz<sup>3</sup> and Liane L. Young<sup>4</sup>

<sup>1</sup>Department of Psychology, Columbia University, New York, New York, USA

<sup>2</sup>Vanderbilt University, Nashville, Tennessee, USA

<sup>3</sup>Northwestern University, Evanston, Illinois, USA

<sup>4</sup>Boston College, Chestnut Hill, Massachusetts, USA

Extending prior research on belief attributions, we investigated the extent to which 5- to 8-year-olds and adults distinguish their beliefs and other humans' beliefs from God's beliefs. In Study 1, children reported that all agents held the same beliefs, whereas adults drew greater distinctions among agents. For example, adults reported that God was less likely than humans to view behaviors as morally acceptable. Study 2 additionally investigated attributions of beliefs about controversial behaviours (e.g., telling prosocial lies) and belief stability. These data replicated the main results from Study 1 and additionally revealed that adults (but not children) reported that God was less likely than any other agent to think that controversial behaviours were morally acceptable. Furthermore, across ages, participants reported that another person's beliefs were more likely to change than either God's beliefs or their own beliefs. We discuss implications for theories regarding belief attributions and for religious and moral cognition.

## Statement of contribution

### *What is already known on this subject*

- Preschoolers can attribute different beliefs to different humans
- Children and adults attribute greater cognitive capacities to God than to humans

### *What the present study adds*

- Children attribute the same moral beliefs to God and humans
- Adults distinguish among different agents' minds when attributing moral beliefs
- Developmental differences are less pronounced in judgements of belief stability

By elementary school age, children from various cultures (e.g., Christian and secular communities within the United States and Spain, Yucatec Maya) attribute more accurate factual knowledge to God versus humans (Barrett, Richert, & Driesenga, 2001; Giménez-Dasí, Guerrero, & Harris, 2005; Knight, 2008; Lane, Wellman, & Evans, 2010, 2012; Richert & Barrett, 2005; Wigger, Paxson, & Ryan, 2013). Yet, a full-fledged understanding of the distinction between God's extraordinary mind and human minds entails a

\*Correspondence should be addressed to Larisa Heiphetz, Department of Psychology, Columbia University, 1190 Amsterdam Ave., New York, NY 10027, USA (email: lah2201@columbia.edu).

protracted developmental process, and even adults often revert to thinking about God's mind as being human-like (Heiphetz, Lane, Waytz, & Young, 2016). Moreover, U.S. adults hold egocentric views of God's ideological beliefs (e.g., about abortion), perceiving such beliefs as especially similar to their own (Epley, Converse, Delbosc, Monteleone, & Cacioppo, 2009; Ross, Lelkes, & Russell, 2012). The current work builds on these studies to extend theoretical understanding of belief attribution in two ways: (1) investigating attributions of moral beliefs to different agents and (2) testing children as well as adults with the same paradigm to gain greater insight into age-related differences and similarities in belief attribution.

Investigating moral beliefs allowed us to build on work examining distinctions among different types of knowledge attributed to God. In prior work, U.S. adults answered questions about blameworthy behaviour (e.g., Does God know that Jen lied to her mother?) faster than questions about praiseworthy behaviour (e.g., Does God know that Ann gives to the homeless?), which elicited faster responses than non-moral questions (e.g., Does God know that Richard's cat is hungry? Purzycki *et al.*, 2012). U.S. adults also reported that God had greater knowledge of moral (vs. non-moral) information even when participants also reported believing in God's omniscience. A similar pattern emerged in the Tyva Republic, a culture in which not all gods are believed to care about morality (Purzycki, 2013). The current studies further investigated whether children (and adults) explicitly distinguish among different moral beliefs and attribute different beliefs to God versus humans. Building on work comparing God's ostensible beliefs in moral versus non-moral domains, we instead compared different types of moral beliefs, including beliefs that have not been examined in prior work on theories of God's mind (e.g., beliefs about controversial moral behaviours).

Specifically, we tested three possibilities regarding children's and adults' judgments about God's mind. Participants may report that they and God are similar to each other and different from other people (Epley *et al.*, 2009; Ross *et al.*, 2012). However, participants may report that their beliefs differ from those held by God and other people. This finding could emerge for several reasons, including Westerner's beliefs that they are unique (Fromkin & Snyder, 1980) and people's greater knowledge of themselves compared with other agents. Finally, participants may report that God's mind differs from all human minds. Participants may report views consistent with this perspective in an attempt to be 'theologically correct' (Barrett, 1999; Slone, 2004). This prediction is further inspired by evidence showing that individuals attribute greater mental capacities to God than to humans (e.g., Barrett *et al.*, 2001; Gray, Gray, & Wegner, 2007; Lane *et al.*, 2010).

To explore the development of understanding God's beliefs, we tested 5- to 8-year-olds and adults, selecting these ages for three reasons. First, 5- to 8-year-olds understand that beliefs vary across different minds (Wellman, 2014), crucial for conceptualizing similarities and differences between God's mind and human minds. Second, many religious concepts develop during middle childhood, including concepts of creationism (Evans, 2001), concepts of communication with God (Lane, Evans, Brink, & Wellman, 2016), and concepts of others' religious beliefs (Heiphetz, Spelke, Harris, & Banaji, 2013). Thus, older children may also differ from younger children in their attributions of moral beliefs to God. Third, prior work reveals nuance in the extent to which children at this age may attribute similar beliefs to God and to people. Elementary schoolers attribute to God both human-like psychological characteristics such as happiness (Shtulman, 2008) and superhuman characteristics such as knowledge of information that ordinary persons could not know (Barrett *et al.*, 2001; Lane *et al.*, 2010). The extent to which children might view God's moral beliefs as similar to or different from people's moral beliefs is not

yet known. One possibility is that children draw fewer distinctions than adults between God's mind and humans' minds because they have less exposure to the diversity of beliefs in general. Children may assume that everyone (God and humans) thinks that good behaviours are acceptable and bad behaviours are not acceptable because they have encountered few examples of anyone holding non-normative moral beliefs. The current work tested this possibility.

## STUDY 1

Study 1 investigated the extent to which individuals distinguish God's mind from human minds when attributing beliefs about good versus bad behaviours. Study 1 also tested the extent to which responses differ among younger children, older children, and adults.

### Method

#### Participants

Participants included 5- to 6-year-olds ( $n = 51$ ;  $M_{\text{age}} = 5.63$  years,  $SD_{\text{age}} = 0.49$  years; 45% female; 53% White; 37% Christian, 4% Jewish, 8% Muslim, 20% non-religious, remainder other/unspecified), 7- to 8-year-olds ( $n = 68$ ;  $M_{\text{age}} = 7.43$  years,  $SD_{\text{age}} = 0.50$  years; 43% female; 63% White; 57% Christian, 4% Jewish, 3% Muslim, 13% non-religious, remainder other/unspecified), and adults ( $n = 61$ ;  $M_{\text{age}} = 35.82$  years,  $SD_{\text{age}} = 12.61$  years; 46% female; 79% White; 51% Christian, 41% non-religious, remainder unspecified). On average, parents reported that children attended services 'a few times a year' (on a scale from 1 = 'never' to 6 = 'every week or more often',  $M_{5\text{-to }6\text{-year-olds}} = 3.89$ ,  $SD_{5\text{-to }6\text{-year-olds}} = 1.85$ ,  $M_{7\text{-to }8\text{-year-olds}} = 4.16$ ,  $SD_{7\text{-to }8\text{-year-olds}} = 1.82$ ), and adults reported attending services 'once a year' ( $M = 2.67$ ,  $SD = 1.91$ ). Children were recruited in a museum in the north-eastern United States and received a sticker. Adults were recruited online and received 50 cents.

In addition to the participants described above, we excluded data from six 5- to 6-year-olds and three 7- to 8-year-olds because the child indicated he/she did not understand the study ( $n = 4$ ), heard another person's responses before participating ( $n = 1$ ), or encountered parental interference during testing ( $n = 4$ ). To ensure that adults were attending to the study, we asked them to recall one belief about which they had been asked. This question appeared after all experimental items, and participants could not return to earlier parts of the survey while answering. Two adults who did not answer this question were excluded from analysis. Analyses that included all excluded participants revealed similar results as those reported below for this and all subsequent studies.

#### Procedure

Ethics approval for all studies was obtained from the last author's institution. The experimenter asked questions about participants' own beliefs (e.g., 'Is it okay to help another person?') and views about God's beliefs and the beliefs of another person, who was introduced as 'a person named Pat' (e.g., 'I wonder whether God/Pat would think that helping another person is okay. What do you think? Does God/Pat think that helping another person is okay?'). The name 'Pat' was chosen because it is gender-neutral, and Pat's gender was never specified to avoid situations in which only some participants shared Pat's gender. The experimenter introduced this task by telling children that he or

she would ask some questions that children could answer by saying ‘yes’ (coded as +1), ‘maybe’ (coded as 0), or ‘no’ (coded as –1). This coding scheme was adapted from prior work with elementary school-aged children (Gelman, Heyman, & Legare, 2007; Heiphetz, Gelman, & Young, 2017) to provide greater sensitivity than would be possible with a dichotomous measure while using a scale that was simple enough for children. ‘Yes’ responses (for good behaviours) and ‘no’ responses (for bad behaviours) were typically more common than ‘maybe’ responses, and ‘maybe’ responses were somewhat more common among adults than among children. Because of this slight difference, we re-analysed the belief attribution task for Studies 1–2 by combining ‘yes’ and ‘maybe’ responses. If adults were less sure than children about God’s beliefs, grouping ‘yes’ and ‘maybe’ responses could alter results. However, combining these categories did not change the patterns reported below.

Items included four questions about good behaviours, including the examples above, and four questions about bad behaviours (e.g., whether hitting another person is okay; see Appendix). Questions were blocked by agent; participants answered all questions about one agent before moving on to the next agent. Block order (the order in which participants answered questions about themselves, Pat, and God) and question order within blocks were counterbalanced. During each item, children viewed a related image (e.g., a person helping another person) on a laptop. This procedure, and the similar procedure for Study 2, lasted 10–15 min.

Adults completed the same procedure using a self-paced online task. However, as is common in studies sampling both children and adults, adults read each question and did not view the visual stimuli presented to children (Heiphetz, Spelke, & Young, 2015; Shaw, Li, & Olson, 2012). The purpose of the images was to keep children engaged with the task, which was not necessary with adults.

## Results and Discussion

We averaged responses across the four items in each of the six categories (beliefs about good and bad behaviours attributed to each of the three agents;  $\alpha = .76$  for good behaviours,  $\alpha = .80$  for bad behaviours). Prior to conducting the primary analyses, we examined whether demographic variables predicted participants’ responses (see Appendix S1 for analyses accounting for participants’ gender and religious background). In general, no robust relations were found between participants’ gender or religious background on the one hand and their belief attributions on the other hand. Below, we report analyses collapsing across these demographic variables; all main effects and interactions remained significant when they were included.

To examine how participants attributed beliefs to God, another person, and themselves, we conducted a 2 (Behaviour: good vs. bad)  $\times$  3 (Agent: God vs. Pat vs. self)  $\times$  3 (Participant Age: 5- to 6-year-olds vs. 7- to 8-year-olds vs. adults) mixed ANOVA with repeated measures on the first two factors (Figure 1).<sup>1</sup> A main effect emerged for each factor: Behaviour,  $F(1, 176) = 4416.55$ ,  $p < .001$ ,  $\eta_p^2 = .96$ , Agent,  $F(1.79, 315.29) = 9.87$ ,  $p < .001$ ,  $\eta_p^2 = .05$ , and Participant Age,  $F(2, 176) = 8.06$ ,  $p = .001$ ,  $\eta_p^2 = .08$ . Each two-way interaction also reached significance, although the three-way interaction did not ( $p = .343$ ). Below, we describe pairwise comparisons for each

<sup>1</sup> In this and all subsequent analyses, non-integer degrees of freedom reflect a Greenhouse Geisser correction for a violation of sphericity.



**Figure 1.** Average extent to which participants in each age group reported that each agent thought that good and bad behaviours were okay in Study 1. Error bars represent 95% confidence intervals. Belief attributions were coded such that No = -1, Maybe = 0, and Yes = 1.

interaction, comparing each mean with each other mean. See Appendix S1 for more details about main effects.

The interaction of Agent x Participant Age,  $F(3.58, 315.29) = 5.28, p = .001, \eta_p^2 = .06$  is the most critical of the two-way interactions in addressing our research questions. Because this analysis involved nine comparisons, uncorrected  $p$  values (reported here and for all subsequent analyses) needed to be .006 or lower to pass the Bonferroni-corrected significance threshold. Children in both age groups did not distinguish among agents ( $ps \geq .096$ , |Cohen's  $d$ |s  $\leq .19$ ). However, adults reported that Pat and they themselves were more likely than God to think that behaviours were okay, collapsing across good and bad behaviours ( $ps < .001$ , Cohen's  $ds \geq .40$ ). Adults did not distinguish between themselves and Pat ( $p = .093$ , Cohen's  $d = .23$ ).

We also found a Behaviour x Agent interaction,  $F(1.70, 298.60) = 13.25, p < .001, \eta_p^2 = .07$ . Because this analysis included six comparisons,  $p$  values needed to be .008 or lower to pass the Bonferroni-corrected significance threshold. Participants responded that they themselves were more likely to think that good behaviours were okay than either God or Pat ( $ps \leq .003$ , Cohen's  $ds \geq .23$ ), who did not differ from each other ( $p = .501$ , Cohen's  $d = .05$ ). Participants also responded that Pat was more likely to think that bad behaviours were okay than they themselves or God ( $ps < .001$ , Cohen's  $ds \geq .27$ ); responses regarding God and the participants themselves did not differ from each other ( $p = .010$ , Cohen's  $d = .19$ ).

Finally, we found a Behaviour x Participant Age interaction,  $F(2, 176) = 16.46, p < .001, \eta_p^2 = .16$ . Because this analysis included six comparisons,  $p$  values needed to be .008 or lower to pass the Bonferroni-corrected significance threshold. Adults were more likely than 5- to 6-year-olds and 7- to 8-year-olds to say that agents thought that bad behaviours were okay ( $ps < .001$ , Cohen's  $ds \geq .92$ ); 5- to 6-year-olds and 7- to 8-year-olds did not differ from each other ( $p = .756$ , Cohen's  $d = .06$ ). No pairwise comparisons regarding good behaviours reached significance ( $ps \geq .017$ , Cohen's  $ds \leq .44$ ).

In addition to these differences between children and adults, there might also be age differences within these two broad age groups. To investigate this possibility, we

correlated age in years among children and, separately, among adults, with responses about each agent's beliefs about good and bad behaviours. This resulted in 12 correlations; therefore,  $p$  values needed to be .004 or lower to pass the Bonferroni-corrected significance threshold, and none did so ( $|rs| \leq .28$ ,  $ps \geq .028$ ).

Whereas children responded similarly to questions about all agents' minds, adults drew stronger distinctions between God's mind, their own mind, and the mind of another person. For example, adults reported that God was less likely than either Pat or they themselves to think that behaviours (collapsing across good and bad behaviours) were okay. (Study 2 provides a more nuanced exploration of adults' concepts of God's versus human's beliefs about behaviours differing in moral valence.) Importantly, children of the age tested in the current work – 5- to 8-year-olds – are able to distinguish between the minds of different agents in other respects. For example, children older than 5 years sometimes attribute greater factual knowledge to God than to humans (Heiphetz *et al.*, 2016). Thus, children's responses in this study may reflect a tendency to reason about moral beliefs as especially similar across agents, beyond a domain-general tendency to reason similarly about different agents' beliefs.

## STUDY 2

Study 2 examined the replicability of patterns from Study 1 and investigated two novel questions. First, in addition to indicating whether agents would think that behaviours were okay, participants also reported whether agents' beliefs would be consistent across time. Although Study 1 did not reveal reliable differences in children's attributions of moral beliefs to God versus humans, prior work indicates that children of the same age may distinguish God's beliefs from humans' beliefs in some non-moral domains (Heiphetz *et al.*, 2016). Asking about the consistency of agents' beliefs allowed us to determine whether children view God's beliefs as akin to humans' beliefs in the moral domain broadly or whether this pattern is limited to only some questions about moral beliefs. Because Judeo-Christian theologies sometimes represent God as unchanging, we reasoned that both children and adults might report that God, but not humans, would always hold consistent beliefs.

Second, we included beliefs about controversial as well as good and bad behaviours. Controversial behaviours, such as telling prosocial lies, elicit disagreement about whether they are right or wrong (Heiphetz, Strohminger, & Young, 2017; Heiphetz & Young, 2017). Few religious teachings address God's views regarding such behaviours, allowing us to discover how individuals conceptualize God's beliefs in cases where the 'theologically correct' answer is not clear.

In addition to the data described below, we sought to replicate the results from adults in a new sample. These results were largely consistent with those presented below; see Appendix S1.

## Method

### Participants

As in Study 1, we collected data from 5- to 6-year-olds ( $n = 58$ ;  $M_{\text{age}} = 5.60$  years,  $SD_{\text{age}} = 0.49$  years; 53% female; 66% White; 53% Christian, 4% Jewish, 2% Muslim, 26% non-religious, remainder other/unspecified), 7- to 8-year-olds ( $n = 55$ ;  $M_{\text{age}} = 7.44$ ,  $SD_{\text{age}} = 0.50$ ; 55% female; 71% White; 39% Christian, 9% Jewish, 31% non-religious,



remainder other/unspecified), and adults ( $n = 56$ ;  $M_{\text{age}} = 33.68$  years,  $SD_{\text{age}} = 11.06$  years; 43% female; 84% White; 30% Christian, 2% Muslim, 63% non-religious, remainder other). On average, parents reported that children attended services 'a few times a year' ( $M_{5\text{-to }6\text{-year-olds}} = 3.65$ ,  $SD_{5\text{-to }6\text{-year-olds}} = 1.97$ ,  $M_{7\text{-to }8\text{-year-olds}} = 3.94$ ,  $SD_{7\text{-to }8\text{-year-olds}} = 2.17$ ), and adults reported attending services 'less than once a year' ( $M = 1.86$ ,  $SD = 1.59$ ). We also excluded data from one 5-year-old boy because his parent indicated that he had autism, one 7-year-old girl because her mother translated study items for her, and eight adults because they failed to correctly answer the attention check question ( $n = 5$ ; the wording was the same as in Study 1) or because they participated in Study 1 ( $n = 3$ ). Procedures for recruiting participants and obtaining demographic data were identical to Study 1, except that adults received \$1.00.

### Procedure

The procedure was identical to Study 1 except for four changes. First, we added two beliefs about controversial behaviours: 'Does [agent] think that telling someone a small lie to help them feel better is okay?' and 'Does [agent] think that eating meat is okay?' We selected these items because children and adults conceptualize these issues in terms of ethics and because these issues tend to elicit disagreement across individuals (Hussar & Harris, 2010; Warneken & Orlins, 2015). Additionally, the religious teachings of Christianity (the dominant religious group in the United States and the affiliation of most religious participants in the current study) do not explicitly describe God's beliefs about these behaviours. Finally, these items have been used in prior work distinguishing controversial versus widely shared moral beliefs (Heiphetz, Strohminger, *et al.*, 2017; Heiphetz & Young, 2017). Second, after reporting whether an agent held a particular belief, participants answered 'yes', 'maybe', or 'no' to the following question: 'Will [agent] always think that?' Third, to ensure that children understood the word 'always', the experimenter asked four questions at the end of the session (e.g., 'Will your mom always be older than you?'; see Appendix). Fourth, to leave sufficient time for the new questions, participants heard about two rather than four beliefs per category. Because of children's limited attention spans, testing more items per category would have made it difficult to simultaneously explore children's concepts of beliefs about controversial behaviours and about belief stability for each belief type. For prior work using one or two items per category with young children, see, e.g., Rhodes and Chalik (2013) and Shaw *et al.* (2012). Perhaps because of the lower number of items per category, Cronbach's alphas associated with these composites were somewhat lower than in Study 1 (.57-.87). For consistency, we report results collapsing across items.

## Results and Discussion

### What do agents believe?

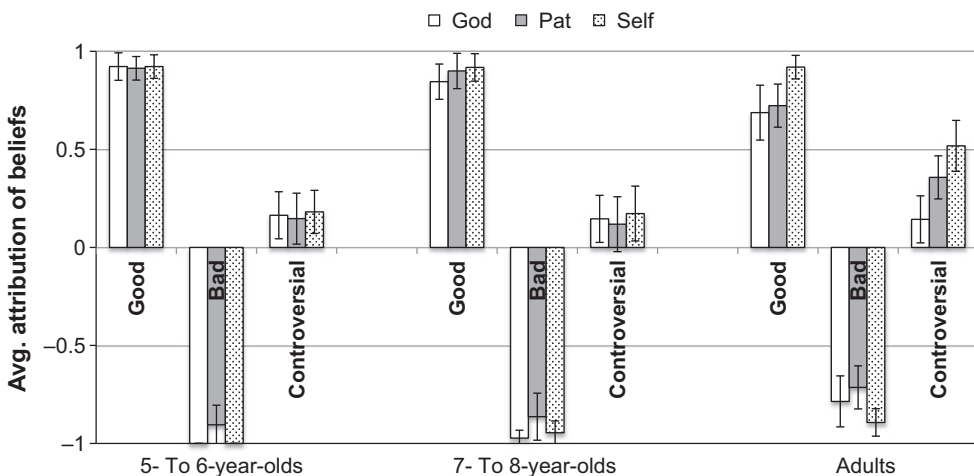
We analysed responses to questions about whether agents could hold beliefs using a 3 (Behaviour: good vs. bad vs. controversial)  $\times$  3 (Agent: God vs. Pat vs. self)  $\times$  3 (Participant Age: 5- to 6-year-olds vs. 7- to 8-year-olds vs. adults) mixed ANOVA with repeated measures on the first two factors. As in Study 1, we found significant main effects for each factor: Behaviour,  $F(1.93, 319.70) = 1562.25$ ,  $p < .001$ ,  $\eta_p^2 = .90$ , Agent,  $F(1.79, 296.79) = 10.10$ ,  $p < .001$ ,  $\eta_p^2 = .06$ , and Participant Age,  $F(2, 166) = 3.39$ ,  $p = .036$ ,  $\eta_p^2 = .04$ . As in Study 1, each two-way interaction reached significance. The main results

were as follows: (1) participants reported that agents were more likely to report that good behaviours, rather than controversial behaviours, were okay and that controversial behaviours, rather than bad behaviours, were okay and (2) adults reported that God was less likely to think that behaviours were okay than either Pat or participants themselves. See Appendix S1 for additional details.

Unlike Study 1, Study 2 uncovered a Behaviour x Agent x Participant Age interaction,  $F(6.93, 574.98) = 3.47, p = .001, \eta_p^2 = .04$ . Follow-up tests consisted of 27 comparisons; therefore, uncorrected  $p$  values needed to be .002 or lower to pass the Bonferroni-corrected significance threshold.

We did not find evidence that children attributed beliefs differently to different agents when considering all three types of behaviours ( $ps \geq .085$ , Cohen's  $ds \leq .41$ ; Figure 2). Adults were *more* likely to report that they, rather than God or Pat, thought that good behaviours were okay ( $ps < .001$ , Cohen's  $ds \geq .49$ ); however, adults were equally likely to report that God and Pat thought that good behaviours were okay ( $p = .540$ , Cohen's  $d = .07$ ). Furthermore, adults were *less* likely to report that they, rather than Pat, thought that bad behaviours were okay ( $p = .002$ , Cohen's  $d = -.39$ ); however, adults were equally likely to report that God and Pat, and God and the participants themselves, thought that bad behaviours were okay ( $ps \geq .006$ , |Cohen's  $d$ 's  $\leq .23$ ). Finally, adults were *less* likely to report that God, rather than Pat or they themselves, thought that controversial behaviours were okay ( $ps \leq .001$ , |Cohen's  $d$ 's  $\geq .41$ ); however, adults were equally likely to report that Pat and they themselves thought that controversial behaviours were okay ( $p = .012$ , Cohen's  $d = .30$ ).

We investigated age differences separately *within* the child and adult samples, correlating age in years with responses about each agent's beliefs about each type of behaviour. This resulted in 18 correlations; therefore,  $p$  values needed to be .003 or lower to pass the Bonferroni-corrected significance threshold. As in Study 1, none did so ( $|rs| \leq .18, ps \geq .063$ ).



**Figure 2.** Average extent to which participants in each age group reported that each agent thought that good, bad, and controversial behaviours were okay in Study 2. Error bars represent 95% confidence intervals. Belief attributions were coded such that No = -1, Maybe = 0, and Yes = 1. All 5- to 6-year-olds answered 'no' when asked whether God and they themselves thought that bad behaviours were okay.

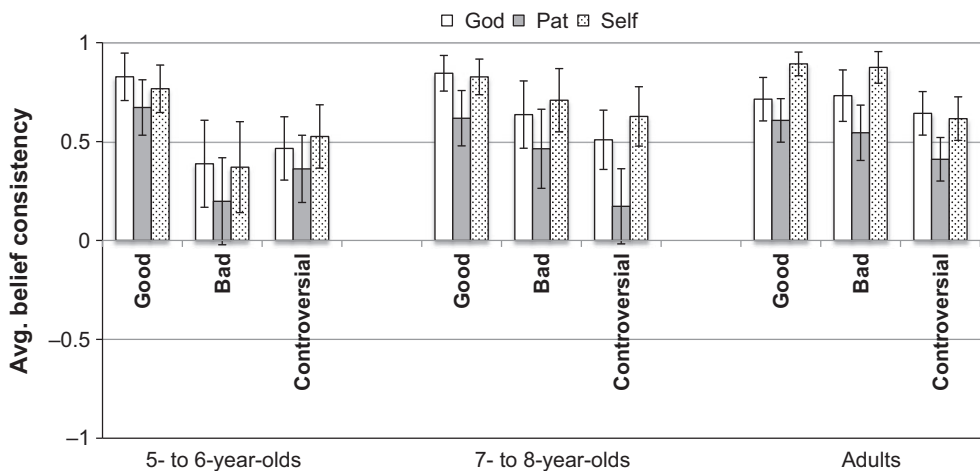


Although the pattern of significance differed across Studies 1 and 2 (e.g., Study 2, but not Study 1, revealed a significant Behaviour  $\times$  Agent  $\times$  Participant Age interaction), the main result of interest emerged in both studies. Specifically, children did not attribute beliefs differently to different agents, whereas adults drew greater distinctions among agents.

### Will agents' beliefs remain consistent?

On average, children provided the expected answers to the 'always' questions (e.g., reporting that their mom would always be older than them) on 3.71 of 4 questions ( $SD = 0.58$ ), indicating that 5- to 8-year-olds understood the word 'always'. Analyses including only children who answered three or four of these questions correctly yielded similar results as those reported below, which include all children.

We analysed responses to questions regarding belief stability using a 3 (Behaviour: good vs. bad vs. controversial)  $\times$  3 (Agent: God vs. Pat vs. self)  $\times$  3 (Participant Age: 5- to 6-year-olds vs. 7- to 8-year-olds vs. adults) mixed ANOVA with repeated measures on the first two factors. This analysis revealed a main effect of Behaviour,  $F(1.75, 290.48) = 33.16$ ,  $p < .001$ ,  $\eta_p^2 = .17$ . Participants reported that beliefs about good behaviours were more consistent than beliefs about controversial and bad behaviours ( $ps < .001$ , Cohen's  $ds \geq .39$ ), which did not differ from each other ( $p = .072$ , Cohen's  $d = .13$ ). This effect was qualified by a Behaviour  $\times$  Participant Age interaction,  $F(3.50, 290.48) = 7.47$ ,  $p < .001$ ,  $\eta_p^2 = .08$  (Figure 3); thus, we examined the extent to which younger participants differed from older participants when considering beliefs about each behaviour type. Because this analysis included nine comparisons, uncorrected  $p$  values needed to be .006 or lower to pass the Bonferroni-corrected significance threshold. No differences emerged among age groups when participants considered beliefs about good and controversial behaviours ( $ps \geq .138$ , Cohen's  $ds \leq .32$ ). However, 7- to 8-year-olds and adults were more likely than 5- to 6-year-olds to report that agents would hold



**Figure 3.** Average extent to which participants in each age group reported that agents would hold consistent moral beliefs across time in Study 2. Error bars represent 95% confidence intervals. Attributions of consistency were coded such that No = -1, Maybe = 0, and Yes = 1.

consistent beliefs about bad behaviours ( $ps \leq .010$ , Cohen's  $ds \geq .42$ ); adults and 7- to 8-year-olds did not differ from each other ( $p = .298$ , Cohen's  $d = .27$ ).

We also found a main effect of Agent,  $F(2, 332) = 33.87$ ,  $p < .001$ ,  $\eta_p^2 = .17$ . Participants reported that God and they themselves were more likely to always hold consistent beliefs than Pat ( $ps < .001$ , Cohen's  $ds \geq .45$ ); however, participants were equally likely to report that God and they themselves would hold consistent beliefs ( $p = .086$ , Cohen's  $d = .13$ ).

No other main effects or interactions reached significance ( $ps \geq .065$ ). The finding that the effect of agent did not vary by participants' age ( $p = .212$ ) suggests that concepts about belief stability may be relatively stable between 5 years and adulthood. Furthermore, as with the items measuring attributions of moral beliefs to agents, we found almost no significant correlations between participants' age in years and the extent to which they reported that agents would hold consistent beliefs across time ( $|rs| \leq .26$ ,  $ps \geq .003$ , with one exception: the older children were, the more likely they were to report that their own beliefs about bad behaviours would remain consistent,  $r = .27$ ,  $p = .003$ ). Although there were age differences in the *types* of beliefs that participants attributed to different agents, the extent to which participants reported that each agent would always have consistent beliefs did not vary by age.

## GENERAL DISCUSSION

Some Judeo-Christian theologies portray God as mysterious, but individuals sometimes report knowing what God's mind is like (Bader, Froese, Johnson, Mencken, & Stark, 2005; Luhrmann, 2012). One way to make sense of an ostensibly unknowable agent is to view that agent as person-like (Waytz *et al.*, 2010). The current work investigated the extent to which children and adults distinguish between God's mind and human minds (the participant's own and that of one other person) when attributing moral beliefs. Participants could have distinguished among agents' minds in three ways: viewing God as especially similar to themselves and conceiving of other people as the 'odd ones out' (Epley *et al.*, 2009; Ross *et al.*, 2012); viewing God as especially similar to other people and conceptualizing themselves as the 'odd one out' (Fromkin & Snyder, 1980); or viewing themselves as especially similar to other people and conceiving of God as the 'odd one out' (consistent with theological teachings and with Barrett *et al.*, 2001; Gray *et al.*, 2007; Lane *et al.*, 2010).

Although the largest effect size emerged for the effect of behaviour – children and adults were more likely to report that agents would think that good behaviours, versus bad behaviours, were morally acceptable – more nuanced differences in attributions of beliefs to agents showed different patterns among age groups. Small effects can be informative (Greenwald, Banaji, & Nosek, 2015); nevertheless, more caution is warranted when interpreting small rather than large effects. The present work suggests that developmental differences may exist in attributions of moral beliefs to different agents. Specifically, children typically reported that they themselves, another person, and God were equally likely to think that good and bad behaviours were acceptable. In contrast, adults typically distinguished among agents; for example, they reported that they were more likely than God or another person to think that good behaviours were acceptable. Adults may have viewed themselves as more moral than other people, consistent with work showing that Western adults value uniqueness (Fromkin & Snyder, 1980) and evaluate themselves more positively than others (Klein & Epley, 2016; Pronin, 2008).

Participants in Study 2 additionally answered questions about agents' beliefs concerning controversial behaviours, which often elicit moral disagreement. Adults appeared to represent God as especially stringent regarding controversial behaviours, reporting that God was less likely than any other agent to think that these behaviours were morally acceptable. Although this effect was smaller than the difference between good versus bad behaviours, it emerged both in Study 2 and a replication (detailed in Appendix S1), and it is consistent with other work revealing that people distinguish between God's versus humans' cognitive capacities (Barrett *et al.*, 2001; Gray *et al.*, 2007; Lane *et al.*, 2010).

This result may also reflect the absence of clear religious teachings regarding controversial behaviours within Christianity. In areas where religious teaching provides clear guidance, participants – especially adults – may report 'theologically correct' ideas that differ from their implicit representations (Barrett, 1999; Barrett & Keil, 1996; Slone, 2004). Without strong cultural guidance about God's beliefs, participants may assign especially stringent beliefs to God to reduce the likelihood of displeasing God. People who assume that God finds controversial behaviours acceptable and perform those behaviours, when in fact God does not approve, may believe that they risk God's condemnation. However, they can 'play it safe' by assuming that God finds controversial behaviours unacceptable and refraining from those behaviours.

We did not find strong evidence that children attribute different moral beliefs to God versus humans. This finding may be specific to contexts in which children attribute moral beliefs to these agents, as 5-year-olds sometimes attribute more accurate factual knowledge to God versus humans (Heiphetz *et al.*, 2016). Furthermore, in Study 2, children distinguished among agents when judging belief stability. Despite children's abilities to distinguish among agents in some contexts, they appear not to do so when attributing moral beliefs to themselves, another person, and God, although caution is necessary when interpreting null effects. These findings have implications for theories regarding social learning and moral development. Children may not have distinguished among agents because they have little experience with agents who hold non-normative moral beliefs (e.g., they may not have encountered agents who think that good behaviours are unacceptable), a possibility consistent with work showing that children are less likely than adults to recognize that different people can hold different moral beliefs (Heiphetz & Young, 2017; Kuhn, Cheney, & Weinstock, 2000). Although the current studies focused on distinctions among different humans' minds, the results could apply more broadly to distinctions among different minds, including God's mind.

In contrast, children and adults reported that their beliefs and God's beliefs were more consistent than Pat's beliefs. Participants may have learned that God is unchanging, and they may have been motivated to see their own beliefs as consistent because stable beliefs about good behaviours may be considered virtuous. These possibilities remain open for future testing.

Study 2 also revealed differences across beliefs. Beliefs about controversial behaviours were judged particularly unstable, especially when compared with beliefs about good behaviours. This finding may reflect participants' experiences of change; it may be more common to change one's own mind, and observe other people changing their minds, about controversial (versus good) behaviours.

An intriguing topic for future research concerns the role of religiosity in representations of God's moral beliefs. In the current work, religion-based demographic factors were not associated with participants' responses. This result is consistent with work that has not found effects of religious background (Heiphetz *et al.*, 2013; Kelemen, 2004;

Shariff & Norenzayan, 2007) and with work suggesting that atheists sometimes display theistic tendencies (Heiphetz *et al.*, 2015; Kelemen & Rosset, 2009). Furthermore, children respond similarly to familiar and novel religious beliefs (Heiphetz, Gelman, *et al.*, 2017; Heiphetz *et al.*, 2013). These studies provide further evidence that religious cognition need not be driven by agreement with particular beliefs. Although it is difficult to interpret null results, and religious affiliation may sometimes influence responses, the current result suggests that average differences in religiosity between children and adults in our samples are unlikely to be the only reason why adults responded differently from children. Non-religious participants may have answered our questions based on cultural representations of the Judeo-Christian God.

Uniting work on belief attributions, religious concepts, and moral cognition, the current research highlights areas in which children exhibit adult-like representations of God's mind, such as in their judgements of the stability of beliefs about moral norms. The current findings also highlight developmental differences in attributions of beliefs. Thus, the current studies demonstrate that representations of different agents' minds become increasingly distinct from each other across development.

## Acknowledgements

The authors wish to thank Lance Bush, Katherine Churchwell, Serena Entezary, Kayla Fries, Monica Oxenreiter, Julia Pingeton, Samuel Rosen, and Shannon Spencer for their assistance with data collection and coding; Davida Vogel for her assistance with manuscript preparation; and Paul Harris for his comments on this manuscript. The authors also wish to thank the Boston Children's Museum for providing testing space. This work was supported by an NSF SBE Post-Doctoral Fellowship (grant SMA-1408989) to LH, grant INDU CU16-1919 from the Indiana University School of Philanthropy to LH, and grant 52185 from the John Templeton Foundation to all of the authors. These institutions were not involved in decisions concerning study design; in the collection, analysis, and interpretation of data; in the writing of the report; and in the decision to submit this article for publication.

## References

- Bader, C. D., Froese, P., Johnson, B., Mencken, F. C., & Stark, R. (2005). *Baylor religion survey*. Retrieved from <http://thearda.com/archive/files/descriptions/BRS2005.asp>
- Barrett, J. L. (1999). Theological correctness: Cognitive constraint and the study of religion. *Method and Theory in the Study of Religion*, 11, 325–339. <https://doi.org/10.1163/157006899x00078>
- Barrett, J. L., & Keil, F. C. (1996). Conceptualizing a nonnatural entity: Anthropomorphism in God concepts. *Cognitive Psychology*, 31, 219–247. <https://doi.org/10.1006/cogp.1996.0017>
- Barrett, J. L., Richert, R. A., & Driesenga, A. (2001). God's beliefs versus mother's: The development of nonhuman agent concepts. *Child Development*, 72, 50–65. <https://doi.org/10.1111/1467-8624.00265>
- Epley, N., Converse, B. A., Delbosc, A., Monteleone, G. A., & Cacioppo, J. T. (2009). Believers' estimates of God's beliefs are more egocentric than estimates of other people's beliefs. *Proceedings of the National Academy of Sciences of the United States of America*, 51, 21533–21538. <https://doi.org/10.1073/pnas.0908374106>
- Evans, E. M. (2001). Cognitive and contextual factors in the emergence of diverse belief systems: Creation versus evolution. *Cognitive Psychology*, 42, 217–266. <https://doi.org/10.1006/cogp.2001.0749>
- Fromkin, H. L., & Snyder, C. R. (1980). The search for uniqueness and valuation of scarcity: Neglected dimensions of value in exchange theory. In K. J. Gergen, M. S. Greenberg & R. H. Willis

- (Eds.), *Social exchange: Advances in theory and research* (pp. 57–75). New York, NY: Plenum Press.
- Gelman, S. A., Heyman, G. D., & Legare, C. H. (2007). Developmental changes in the coherence of essentialist beliefs about psychological characteristics. *Child Development, 78*, 757–774. <https://doi.org/10.1111/j.1467-8624.2007.01031.x>
- Giménez-Dasí, M., Guerrero, S., & Harris, P. L. (2005). Intimations of immortality and omniscience in early childhood. *European Journal of Developmental Psychology, 2*, 285–297. <https://doi.org/10.1080/17405620544000039>
- Gray, H. M., Gray, K., & Wegner, D. M. (2007). Dimensions of mind perception. *Science, 315*, 619. <https://doi.org/10.1126/science.1134475>
- Greenwald, A. G., Banaji, M. R., & Nosek, B. A. (2015). Statistically small effects of the Implicit Association Test can have societally large effects. *Journal of Personality and Social Psychology, 108*, 553–561. <https://doi.org/10.1037/pspa0000016>
- Heiphetz, L., Gelman, S. A., & Young, L. L. (2017). The perceived stability and biological basis of religious beliefs, factual beliefs, and opinions. *Journal of Experimental Child Psychology, 156*, 82–98. <https://doi.org/10.1016/j.jecp.2016.11.015>
- Heiphetz, L., Lane, J. D., Waytz, A., & Young, L. L. (2016). How children and adults represent God's mind. *Cognitive Science, 40*, 121–144. <https://doi.org/10.1111/cogs.12232>
- Heiphetz, L., Spelke, E. S., Harris, P. L., & Banaji, M. R. (2013). The development of reasoning about beliefs: Fact, preference, and ideology. *Journal of Experimental Social Psychology, 49*, 559–565. <https://doi.org/10.1016/j.jesp.2012.09.005>
- Heiphetz, L., Spelke, E. S., & Young, L. L. (2015). In the name of God: How children and adults judge agents who act for religious versus secular reasons. *Cognition, 144*, 134–149. <https://doi.org/10.1016/j.cognition.2015.07.017>
- Heiphetz, L., Strohminger, N., & Young, L. L. (2017). The role of moral beliefs, memories, and preferences in representations of identity. *Cognitive Science, 41*, 744–767. <https://doi.org/10.1111/cogs.12354>
- Heiphetz, L., & Young, L. L. (2017). Can only one person be right? The development of objectivism and social preferences regarding widely shared and controversial moral beliefs. *Cognition, 167*, 78–90. <https://doi.org/10.1016/j.cognition.2016.05.014>
- Hussar, K. M., & Harris, P. L. (2010). Children who choose not to eat meat: A study of early moral decision-making. *Social Development, 19*, 627–641. <https://doi.org/10.1111/j.1467-9507.2009.00547.x>
- Kelemen, D. (2004). Are children “intuitive theists”? Reasoning about purpose and design in nature. *Psychological Science, 15*, 295–301. <https://doi.org/10.1111/j.0956-7976.2004.00672.x>
- Kelemen, D., & Rosset, E. (2009). The human function compunction: Teleological explanation in adults. *Cognition, 111*, 138–143. <https://doi.org/10.1016/j.cognition.2009.01.001>
- Klein, N., & Epley, N. (2016). Maybe holier, but definitely less evil, than you: Bounded self-righteousness in social judgment. *Journal of Personality and Social Psychology, 110*, 660–674. <https://doi.org/10.1037/pspa0000050>
- Knight, N. (2008). Yukatek Maya children's attributions of belief to natural and non-natural entities. *Journal of Cognition and Culture, 8*, 235–243. <https://doi.org/10.1163/156853708x358164>
- Kuhn, D., Cheney, R., & Weinstock, M. (2000). The development of epistemological understanding. *Cognitive Development, 15*, 309–328. [https://doi.org/10.1016/s0885-2014\(00\)00030-7](https://doi.org/10.1016/s0885-2014(00)00030-7)
- Lane, J. D., Evans, E. M., Brink, K., & Wellman, H. M. (2016). Developing concepts of ordinary and extraordinary communication. *Developmental Psychology, 52*, 19–30. <https://doi.org/10.1037/dev0000061>
- Lane, J. D., Wellman, H. M., & Evans, E. M. (2010). Children's understanding of ordinary and extraordinary minds. *Child Development, 81*, 1475–1489. <https://doi.org/10.1111/j.1467-8624.2010.01486.x>
- Lane, J. D., Wellman, H. M., & Evans, E. M. (2012). Sociocultural input facilitates children's developing understanding of extraordinary minds. *Child Development, 83*, 1007–1021. <https://doi.org/10.1111/j.1467-8624.2012.01741.x>



- Luhrmann, T. M. (2012). *When God talks back: Understanding the American evangelical relationship with God*. New York, NY: Alfred A. Knopf.
- Pronin, E. (2008). How we see ourselves and how we see others. *Science*, *320*, 1177–1180. <https://doi.org/10.1126/science.1154199>
- Purzycki, B. G. (2013). The minds of gods: A comparative study of supernatural agency. *Cognition*, *129*, 163–179. <https://doi.org/10.1016/j.cognition.2013.06.010>
- Purzycki, B. G., Finkel, D. N., Shaver, J., Wales, N., Cohen, A. B., & Sosis, R. (2012). What does God know? Supernatural agents' access to socially strategic and non-strategic information. *Cognitive Science*, *36*, 846–869. <https://doi.org/10.1111/j.1551-6709.2012.01242.x>
- Rhodes, M., & Chalik, L. (2013). Social categories as markers of intrinsic interpersonal obligations. *Psychological Science*, *24*, 999–1006. <https://doi.org/10.1177/0956797612466267>
- Richert, R. A., & Barrett, J. L. (2005). Do you see what I see? Young children's assumptions about God's perceptual abilities *The International Journal for the Psychology of Religion*, *15*, 283–295. [https://doi.org/10.1207/s15327582ijpr1504\\_2](https://doi.org/10.1207/s15327582ijpr1504_2)
- Ross, L. D., Lelkes, Y., & Russell, A. G. (2012). How Christians reconcile their personal political views and the teachings of their faith: Projection as a means of dissonance reduction. *Proceedings of the National Academy of Sciences of the United States of America*, *109*, 3616–3622. <https://doi.org/10.1073/pnas.1117557109>
- Shariff, A. F., & Norenzayan, A. (2007). God is watching you: Priming God concepts increases prosocial behavior in an anonymous economic game. *Psychological Science*, *18*, 803–809. <https://doi.org/10.1111/j.1467-9280.2007.01983.x>
- Shaw, A., Li, V., & Olson, K. R. (2012). Children apply principles of physical ownership to ideas. *Cognitive Science*, *36*, 1383–1403. <https://doi.org/10.1111/j.1551-6709.2012.01265.x>
- Shulman, A. (2008). Variation in the anthropomorphization of supernatural beings and its implications for cognitive theories of religion. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *34*, 1123–1138. <https://doi.org/10.1037/0278-7393.34.5.1123>
- Slone, D. J. (2004). *Theological incorrectness: Why religious people believe what they shouldn't*. New York, NY: Oxford University Press.
- Warneken, F., & Orlins, E. (2015). Children tell white lies to make others feel better. *British Journal of Developmental Psychology*, *33*, 259–270. <https://doi.org/10.1111/bjdp.12083>
- Waytz, A., Morewedge, C., Epley, N., Monteleone, G., Gao, J., & Cacioppo, J. T. (2010). Making sense by making sentient: Effectance motivation increases anthropomorphism. *Journal of Personality and Social Psychology*, *99*, 410–435. <https://doi.org/10.1037/a0020240>
- Wellman, H. M. (2014). *Making minds: How theory of mind develops*. New York, NY: Oxford University Press.
- Wigger, J. B., Paxson, K., & Ryan, L. (2013). What do invisible friends know? Imaginary companions, God, and theory of mind *International Journal for the Psychology of Religion*, *23*, 2–14. <https://doi.org/10.1080/10508619.2013.739059>

Received 14 February 2017; revised version received 11 November 2017

### Supporting Information

The following supporting information may be found in the online edition of the article:

**Appendix S1.** Additional analyses.



## Appendix:

In Study 1, questions about the participant were in the following form: 'Is it okay to X?' Questions about God and Pat were in the following form: 'I wonder whether [agent] would think that Xing is okay. What do you think? Does [agent] think that X is okay?' In Study 2, questions about all agents were in the following form: 'Do you/does [agent] think that Xing is okay?' and 'Will [agent] always think that?' G = Good, B = Bad; C = Controversial

G: Help another person [Study 1]

G: Make cookies for someone [Study 1]

B: Tell someone a lie [Study 1]

B: Copy someone else's answers on a test [Study 1]

G: Buy someone a birthday present [all studies]

G: Give money to someone who is poor [all studies]

B: Steal from another person [all studies]

B: Hit a smaller person [all studies; 'small' instead of 'smaller' in Study 2]

C: Tell someone a small lie to help them feel better [Study 2]

C: Eat meat [Study 2]

'Always' Questions from Study 2:

Will you always be the same height that you are right now?

Will you always be the same age that you are right now?

Will your mom always be older than you?

Will you always be a boy/girl [child's own gender]?