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What Do Invisible Friends Know? Imaginary Companions, God, and Theory of Mind

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Theory of mind (ToM) research has been carried out in relation to a variety of human and nonhuman agents such as parents, friends, God, Mayan forest spirits, and animals. The present study adds a new agent to the list—the imaginary/invisible friend. Three types of ToM tasks were administered to 36 children, ages 2 to 8, who had invisible friends at the time of the tasks: occluded picture, background knowledge, and surprising contents tasks. The knowledge attributed to imaginary companions was compared to the knowledge attributed to God, as well as to a human and to a dog. Results showed that younger children tended to attribute knowledge to all agents, including imaginary friends. Older children treated God differently from all other agents, but the invisible friend was also treated differently from the human and the dog. Implications regarding cognitive development and anthropomorphism are considered, as well as for the in-between character of invisible friends.

Theory of mind (ToM) research has become a helpful tool for better understanding how children think about the thinking of others. Over the past decade, ToM studies have branched into religious territory by exploring how children think about God's thinking. The present study adds another figure for comparison—the imaginary companion. What do these special friends know? Does their invisibility or status as pretend limit their knowledge in the mind of a child? Or do these friends have special Godlike abilities that allow them to know what people cannot? What implications are there for a theory of the religious mind?

What began with Piaget asking children about the perspective of a doll placed on the other side of a mountain display has developed into a much wider and finely tuned set of

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studies exploring the ways children think about the minds of others (Piaget & Inhelder, 1967). In general, such research has involved various forms of perceptual perspective taking (Flavell, Flavell, & Green, 1983; Richert & Barrett, 2005; Yaniv & Shatz, 1988), false belief or surprising contents tasks (Avis & Harris, 1991; Gopnik & Astington, 1988; Wimmer & Perner, 1983), and background knowledge tasks (Chandler & Helm, 1984; Barrett, Moore Newman, & Richert, 2003; Wimmer, Hogrefe, & Perner, 1988). The developmental question has been: How do children develop a fuller understanding of the perspectives, beliefs, desires, and knowledge of others? For example, if one shows a typical 3-year-old that a crayon box actually contains rocks (surprising contents task), the child is likely to say that others will also know that rocks are in the box. Once 3-year-olds know something, they tend to say everyone knows. A typical 7-year-old, however, will say that others would be fooled by the box and think that crayons are inside. The 7-year-old is demonstrating a robust, representational ToM.

This growing body of studies paints a picture of typical development with a robust, representational ToM emerging in childhood at about 5 to 6 years of age, unless disrupted by developmental delays or challenges such as autism (Baron-Cohen, 1995; Moses & Chandler, 1992; Wellman, Cross, & Watson, 2001). Once crossing this threshold, children realize others can have a false belief, a different perspective of something, or that background knowledge is required to fully understand an event or situation. Younger children, however, have difficulty disentangling what they know from what others know.

Research by Barrett, Richert, and Driesenga (2001) added an important dimension to ToM experiments by asking children questions regarding the knowledge of God and other nonhumans (e.g., What would God think is inside the box? What would a dog think? A tree?). They found that among children who had heard of God, God's knowing was treated as different. For example, God would know that rocks are inside the box even when a mother or a dog would not; God possesses superknowing abilities. In addition, another study (Barrett et al., 2003) found that 3- and 4-year-olds realized the limits of a dog's knowledge even before they realized such limits for another human (mother).

Such findings have raised important questions about how children come to think about God. A Freudian/Piagetian type of anthropomorphism has assumed that a child first comes to understand human reasoning abilities and then applies this understanding like a template to nonhumans, whether animals or God. The recent challenge has been to account for the way a child overcomes this human template to develop ideas about God. Why do 5-year-olds attribute superknowing to God even when they realize the limits of human knowing? Even if taught that God knows all, why does this teaching take hold so easily compared to so much else that parents and teachers try to impress upon children?

In response, Barrett and Richert (2003) suggested that the underlying anthropomorphic premise could be wrong. They question "the assumption that children first form thorough human concepts and then use these to conceptualize God (and other beings)" (p. 300). Instead, in what they call the "preparedness hypothesis," they suggested the possibility that the early-developing conceptual structures for reasoning about other minds are more generic, not specific to humans, and are used to think about the thinking of nonhuman and human beings alike. Furthermore, for young children the default assumption is knowledge—others will know what the child knows. The implication is that the notion of a God or Gods—beings with superknowing abilities—is not particularly difficult for children to understand. The developmental task for a child is not so much overcoming the human template in order to reason about a superknowing God. Instead,

the task is that of teasing out what kinds of beings have limits on knowing and what kinds do not. The strength of the Barrett and Richert position is that it helps account for the ease of transmission and ubiquity of religious ideas that would otherwise seem to violate expectations, if based upon human minds. Children can easily understand that God can know what others cannot—whether the hidden contents of a box or the silent prayers of the heart.

Replication studies have yielded comparable results generally (Giménez-Dasí, Guerrero, & Harris, 2005; Knight, 2008; Knight, Sousa, Barrett, & Atran, 2004; Makris & Pnevmatikos, 2007; Richert & Barrett, 2005) but divergent interpretations as to whether there still might be an anthropomorphic period in development when children are compelled to attribute human limitations of knowledge to God or agents with special powers (Lane, Wellman, & Evans, 2010) or with specific tasks (Makris & Pnevmatikos, 2007). The present study builds upon these earlier ones by contributing another type of figure for comparison—the imaginary friend (IF). The success of young children in reasoning about a superknowing God in some cases but not others could be a product of varied enculturation regarding God's properties (but see Knight, 2008). What then do IFs know? Presumably there is no adult-endorsed discourse, enculturation, or indoctrination about what IFs do and do not know. Do young children attribute accurate knowledge to this type of being and/or differentiate what they know from what other agents know? What about older children with a well-developed, representational ToM? How does the knowledge they attribute to their IFs compare to the knowledge they attribute to God? Are IFs limited like people or superknowing like God? The ways children spontaneously think about the minds of their IFs may provide clues for the ways children think about minds as such. A tendency to attribute superknowing abilities to them would strengthen the case for the preparedness hypothesis.

Research into the phenomenon of IFs is very limited generally but even more so when considering the studies done with children while they actually have the companions (rather than asking people to reflect back on them). No known research has treated the IF as an agent of knowledge in a ToM test. Taylor and Carlson (1997) conducted ToM tasks with 4-year-olds in order to compare the performance of children with imaginary companions at the time to those without them (those with IFs performed significantly better). But the study of Taylor and Carlson did not involve treating the companions as agents in the tasks. That is, they did not ask what the IFs would know. D. G. Singer and Singer (1990) and J. L. Singer and Singer (1981) explored the relationship between a child's having an imaginary playmate and various factors (IQ, television watching, cooperative behaviors), but they did not explore how children understood the knowledge or perspective of the imaginary figures. A different study by Taylor and Carlson (2000), as well as one by Mills (2003), explored the influence of parental religious/cultural attitudes toward imaginary companions and found that a religious worldview can play an important role in how the companions are interpreted (e.g., as pretend friends, demonic beings, guides from a previous life). But neither study explored what knowledge children themselves attributed to these beings.

D. G. Singer and Singer (1990) also touched upon the subject of religion as they built a theoretical framework for understanding the phenomenon of IFs. They pointed to the writings of Jaynes (1977, 1989/2006) and saw a cognitive connection between these special companions and God (as well as ghosts and spirits generally). Jaynes believed imaginary playmates to be a vestige of the bicameral mind, a mind not fully self-conscious. Instead of a decision-making "I," people heard the voices of the Gods or God telling them what to do. From

this point of view, God is a form of imaginary friend.[1] In contrast, Taylor (1999) is more skeptical. She asked whether "fairies, ghosts, creatures from outer space, or even God" should be considered imaginary companions, and answers: "I think not" (p. 143). Although not completely ruling out the possibility of some overlap between pretense and religion,[2] the fact that many adults consider beings like God or angels to be real (rightly or wrongly)—and not pretend or imaginary—makes them qualitatively different. The experience of the believer, Taylor suggested, "is quite different from that of a child interacting with a pretend friend" (p. 143). In all, however, Taylor and Carlson (2000) concluded that the relationship between religion and pretense needs more systematic investigation, especially research that pursues children's "interpretations of their own experiences" (p. 264).

To that end, the present study explores how children think about IFs as well as God. Our fundamental question was, among children with IFs, what is the relationship between knowledge attributed to IFs and the knowledge attributed to other agents? Do young children attribute knowledge to IFs like they do for other agents, as the preparedness hypothesis would predict? Do older children—those demonstrating a robust, representational ToM—attribute special knowledge to IFs like they do for God? If God is much like an IF, we would expect no significant difference between the knowledge an older child attributes to an IF and the knowledge attributed to God.

METHOD

Participants

Thirty-six children ranging from 2 years 10 months to 8 years 2 months, and with an average age of 4 years 10 months, participated in the study. Girls ($n = 25$) outnumbered boys ($n = 11$), and the largest age group consisted of 4-year-olds ($n = 16$). Children were recruited through flyers directed at parents with a "child 3–7 years old who currently has an imaginary companion." Younger and older children were neither sought nor excluded if we were contacted, and as a result two older 2-year-olds and a younger 8-year-old were included. The flyer was widely distributed in churches, private schools, and preschools and was posted in many public/community and commercial spaces in the Louisville, Kentucky, metro area. The majority of the children were either Roman Catholic ($n = 11$) or Presbyterian ($n = 13$), two large denominations of the area. Lutherans, Baptists, Methodists, the United Church of Christ, and "no affiliation" were represented as well. The "no affiliation" children showed no hesitation in answering questions about God.

As Taylor (1999) discussed, finding and determining who or what qualifies as an imaginary companion can be fraught with difficulties. Parents sometimes do not realize their child has an IF, and children often engage stuffed animals or action figures, as if the toys have big personalities. In the flyer and in preliminary conversations with parents, we did allow that "in some cases" the companion could be based upon a toy or stuffed animal "as in the *Calvin and Hobbes* comics." However, two factors helped narrow down such ambiguous cases:

[1]It is important to note that Jaynes's theory was not based upon research with children but upon linguistic-historical analyses of the Gods described in ancient texts and the resemblances to a child's IF.

[2]Taylor and Carlson (2000) did find some children naming "Jesus" as their imaginary friend.

(a) Emphasis upon "invisibility": The heading of the flyer itself began with "Calling All Invisible Friends" and used a logo also employing the term "Invisible Friends." The body of the flyer employed "imaginary" in places, but the emphasis was upon invisibility. (b) When parents inquired about the study and asked about stuffed animals or dolls (e.g., "She talks with her Teddy Bear all the time"), we clarified that unless the Teddy Bear talked back we could not include the child in the study.

As a result nearly all of the companions of the children we interviewed were invisible, with a few instances of the IF being based upon characters such as a real friend from another city or a grandfather who had died when the child was a baby.[3] In two instances, siblings shared an IF, sometimes playing with George or Sally Monster together, sometimes alone.

Materials and Procedure

Three different types of ToM tasks were given to each child, always in the same order: an occluded picture task, background knowledge/scribbles task, and a surprising contents task. For each task children were asked about the knowledge of each of four agents: a friend "others can see" or visible friend (VF), the invisible friend (IF), a dog, and God. A picture of a real dog was shown; names of the VFs and IFs were attained before the tasks began and were used throughout the tasks. Often children had multiple IFs, in which case they were asked to name a favorite and the interviewer would ask about "Stella and the others," for example. This created no hesitation among the children except in four instances (of the 108 total tasks administered) in which children differentiated answers among the IFs on specific tasks.[4] In addition, children were asked where the IF was, and in all but one case, the IF was elsewhere. This would be important when conducting the task, so that the IF could not see what was going on.

Task 1: Occluded picture/limited perspective (adapted from Chandler & Helm, 1984). The child was shown a green file folder and told there was a picture inside, which they could see part of through the (1 × 3 in.) window cut in the folder. They were asked whether they knew what the whole picture was. Nobody knew, but most children tried guessing. Then the child was asked the same question for each agent: "If I show this to (VF's name/IF's name/dog/God), and it is the first time _____ sees it, and it was covered up like this, would _____ know what the whole picture is?" If the child answered "yes," then the child was asked, "What?" and the answers were recorded. After asking for each agent, the interviewer revealed the whole picture to the child (an elephant on a ball), emphasizing that the child and only the child was being shown the whole picture. Then the exact same question, for each agent, was asked again and answers recorded.

Task 2: Scribble/background knowledge (adapted from Barrett et al., 2003). The child was shown three different scribbles, each on its own $8\frac{1}{2}$ × 11 in. sheet of paper. They

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[3]For a fuller description of the IFs the children described and discussion of previous research on the subject, see Wigger (2011).

[4]Notable, because the child was so young, one of those instances was from an older 2-year-old who said, on the occluded picture task, that one IF would know but the other would not.

were told the scribbles "are part of a secret code I made up and have not taught to anyone else, and each scribble stands for something, but no one else knows what they mean." Then they were asked whether they knew, and again whether each agent knew what they meant (asked individually as before). Again, children usually guessed in answering for themselves and for the other agents. (One child actually guessed one scribble correctly!) The children were then taught the meaning of each scribble (tree, book, sun) and rehearsed them until the interviewer was confident the child knew what they represented. As with the occluded picture, the children were then asked exactly the same questions again, for each agent. "If I show these scribbles to (VF/IF/dog/God), and no one explained them to ＿＿＿＿＿ , will ＿＿＿＿＿ know what they mean?"

Task 3: Surprising contents/false belief.   In the final task, children were shown a crayon box and asked whether they knew its contents. All children said yes and named "crayons" (or "markers" or "colors"). This time, to vary and shorten the task, the children were not asked about each agent until after the disclosure. The crayon box was immediately shown to contain rocks instead of crayons, surprising the children. The rocks were closed back up in the box and then the child was asked whether each agent would know the contents of the box.

RESULTS

Scores were based upon answers to the questions for each agent after the disclosure to the child (i.e., the whole picture, the meaning of scribbles, rocks are in box). Answers indicating that an agent was ignorant of what the child knew were scored 1, suggesting that a child could disentangle what he or she knew from other agents' knowledge. Answers indicating an agent would know the same as the child were scored 0. The scoring code was used for each agent and across all tasks. For example, if a child said the VF thought crayons were in the box but that God would know there are rocks, the answer was scored 1 for the VF and 0 for God. In the instances in which the children differentiated answers among the IFs, percentages were calculated (one IF knows whereas the other does not was scored 0.5). Answers for an agent that matched the child's answer were scored 0.[5]

Friedman tests were conducted to compare children's responses for the same agents across the three different tasks, with age group (3 years and younger, 4 years, and 5+ years) as a covariate. No significant differences were found; therefore, we created a combined score, ranging from 0 to 3, for all three tasks for each agent. A simple linear regression examining answers for each agent found a significant positive relationship with age in months for all the agents but God, in each case, $p < .001$: VF, $r = .683$, $t(34) = 5.45$; IF, $r = .564$, $t(34) = 3.99$; dog, $r = .554$, $t(34) = 3.88$. Answers for God, however, $r = .17$, $t(34) = 1.04$, were not significantly related to age.

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[5]The oldest child said (surprisingly, compared to her other answers) that the dog would know rocks were in the crayon box, but then she immediately volunteered that the dog "would smell the nature." We conservatively scored this as 0.

Analyses by Age Groups

Children were grouped by ages: 3-year-olds, including the two 2-year-olds ($n = 9$, $M = 41$ months); 4-year-olds ($n = 16$, $M = 52$ months); and 5-year-olds or older ($n = 11$, $M = 83$ months). Answers for each agent and each ToM task are compared in Figure 1 using average scores grouped by age.

A repeated measures analysis of variance (ANOVA) revealed no significant differences among agents for the 3-year-old group, $F(3, 24) = .902$, *ns*. A one-sample *t* test against a test value of 1.5 (out of 3, representing chance answering) revealed that all but the scores for a dog were significantly below chance, suggesting a tendency to attribute knowledge instead of ignorance: VF, $M = .78$, $SD = .67$, $t(8) = 3.25$, $p = .012$; IF, $M = .72$, $SD = .67$, $t(8) = 3.5$, $p = .008$; dog, $M = 1$, $SD = 1.1$, $t(8) = 1.34$, $p = .21$; God, $M = .67$, $SD = .87$, $t(8) = 2.89$, $p = .02$.

Among 4-year-olds, the IF and God responses remained significantly below 1.5: IF, $M = .78$, $SD = 1.02$, $t(15) = 2.83$, $p = .013$; God, $M = .88$, $SD = 1.09$, $t(15) = 2.30$, $p = .036$, and it is in this age group that differences between agents emerged. A repeated measures ANOVA revealed a significant difference among agents within the 4-year-old group, $F(3, 45) = 15.60$, $p = .008$. Planned comparisons were conducted to specify differences between particular agents. Reported comparisons reflect *p* values after least significant difference corrections for multiple tests. In paired *t* tests the dog was treated as significantly different from God, $t(15) = 2.44$, $p = .03$, and from the IF, $t(15) = 2.79$, $p = .014$, whereas the difference between the dog and the VF was only approaching significance, $t(15) = 1.86$, $p = .08$. Among the 4-year-olds, the dog was treated as more limited in its knowledge than the other agents. In addition, even with these small sample sizes the difference between the VF and the IF
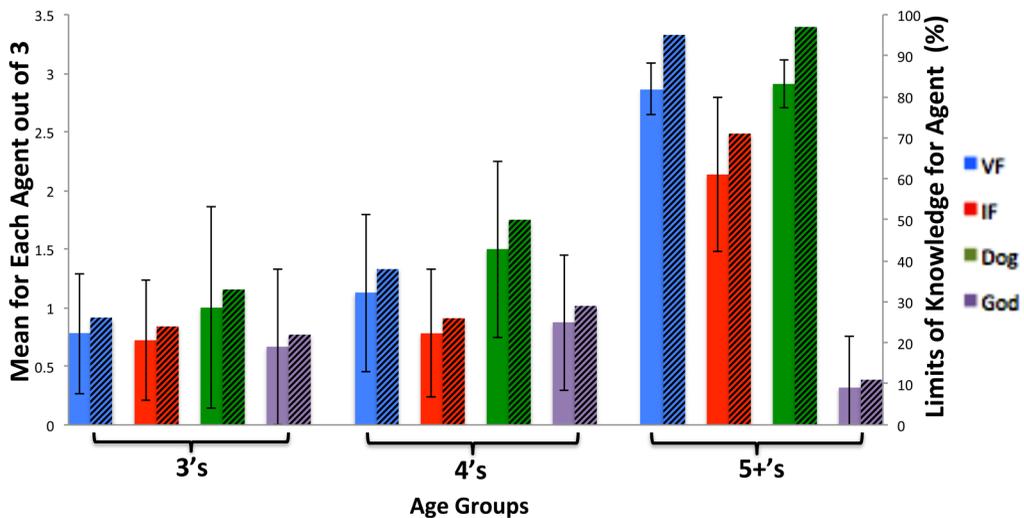

FIGURE 1   Means for each agent by age groups (left axis) and percentage of answers per agent attributing limits of knowledge (right axis). *Note.* The solid bars should be read against the left axis and the shaded bars against the right axis. The error bars represent the 95% confidence interval. (Color figure available online.)

approached significance, $t(15) = 2.11$, $p = .052$, hinting at a difference that appeared in the older group. There was no significant difference between the IF and God among 4-year-olds.

Among the 5-year-olds and older group, the VF was comparable with the dog in terms of having limited knowledge. All but one child scored a 3 for the dog. All but two children scored a 3 for the VF. Compared to the human and dog, however, the IF and God were treated differently by these children. A repeated measures ANOVA revealed significant differences between agents, $F(3, 30) = 50.539$, $p < .001$. In paired t tests, the differences between God and each of the other agents, including the IF, were significant, VF, $t(10) = 12.98$; IF, $t(10) = 6.69$; dog, $t(10) = 12.94$, all $ps < .001$. These older children regarded God as knowing things other agents did not. The results from these older children show that there was a significant difference between the knowledge children attributed to an IF and the knowledge attributed to God in the ToM tasks, once a representational ToM emerged. In addition, within this older age group children answered differently between the IF and the dog, $t(10) = 2.67$, $p = .02$, and the IF and the VF, $t(10) = 2.39$, $p = .04$. The IF was regarded as knowing significantly less than God but significantly more than a dog or VF.

Analyses by ToM Facility

Chronological age may not provide the clearest picture of developmental trends given that a representational ToM can emerge in children younger than 5 and older children still may not have such facility (Wellman et al., 2001). To examine the impact of having a representational ToM on answers for nonhuman agents, we created three groups based upon children's composite scores on the three tasks for only the VF (the ordinary human): Low ToM (scoring 0s for VF, $n = 11$, $M = 48$ months), Emerging ToM (scoring 1s and 2s on VF, $n = 13$, $M = 51$ months), and Robust ToM (scoring 3s on VF, $n = 12$, $M = 77$ months).[6] So, for example, the Robust ToM group retained all but two of the 5-year-old and older children and gained three 4-year-olds (the youngest to score a 3 on VF was 4 years 1 month). The results of this grouping are shown in Figure 2.

In the Low ToM group, scores for all agents were significantly below chance levels (1.5), even for the most limited agent, the dog, $t(10) = 4.5$, $p = .001$, and a repeated measures ANOVA revealed no significant differences among agents, $F(3, 30) = .82$, ns. In the Emerging ToM group, however, one-sample t tests revealed that the dog was significantly above chance, $t(12) = 2.18$, $p = .05$, and scores for God remained significantly below, $t(12) = 2.21$, $p = .05$; the VF and IF showed no significant difference from chance. A repeated measures ANOVA revealed significant differences between the agents of the Emerging ToM group, $F(3, 36) = 6.58$, $p = .001$. The dog was treated as significantly different from all other agents: VF, $t(12) = 2.79$, $p = .016$; IF, $t(12) = 3.32$, $p = .006$; God, $t(12) = 3.27$, $p = .007$. The difference between the VF and God was significant, $t(12) = 2.18$, $p = .05$, whereas the difference between the VF and IF was only approaching significance, $t(12) = 1.87$, $p = .086$. As was the case with the 4-year-old group, there was no significant difference between God and IF.

Among those in the Robust ToM group, all but one of these children who scored 3s for VF also scored 3s for the dog (the exception was the 8-year-old who said the dog would smell

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[6]When combined, those who scored 1s ($n = 6$) and 2s ($n = 7$) create a group comparable in size to the other two.
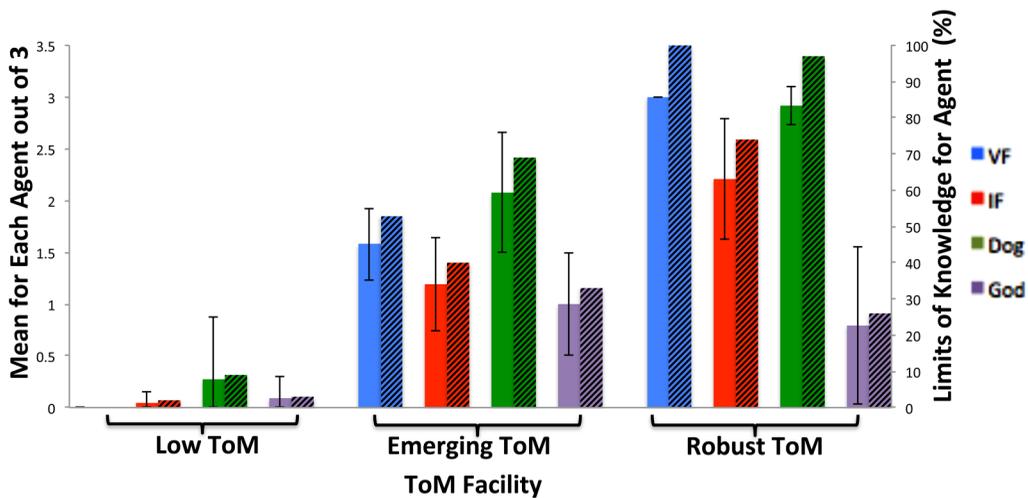
FIGURE 2   Means for each agent for each theory of mind (ToM) group (left axis) and percentage of answers per agent attributing limits of knowledge (right axis). *Note.* The solid bars should be read against the left axis and the shaded bars against the right axis. The error bars represent the 95% confidence interval. (Color figure available online.)

the rocks in the crayon box). A repeated measures ANOVA revealed significant differences between agents within this group as well, $F(3, 33) = 25.04$, $p < .001$. Like the 5-year-old and older group, there were significant differences between God and each of the other agents: VF, $t(11) = 6.39$, $p < .001$; IF, $t(11) = 4.02$, $p = .002$; dog, $t(11) = 6.29$, $p < .001$. In addition, there were significant differences between the IF and both VF and dog: VF, $t(11) = 2.99$, $p = .012$; dog, $t(11) = 2.75$, $p = .02$.

DISCUSSION

Concerning the relationship between God and human/animal agents in ToM tasks, our results generally replicate the findings of similar studies. First, 3-year-olds did not disentangle other agents' knowledge from what they knew themselves; they easily attributed knowledge to human and nonhuman agents alike despite perceptual constraints or the need for background information. Second, 4-year-olds and those with an emerging ToM began to differentiate kinds of knowledge and perspectives based upon the agent—the dog standing out in comparison to God, and in this study, to an invisible friend as well. Third, older children (those with a robust representational ToM) treated God differently from other agents (including IFs), attributing superknowledge to God even when they treated other agents as limited.

These results support Barrett and Richert's (2003) claim that the early-developing conceptual structures for reasoning about other minds are not necessarily human specific and are biased toward attributing knowledge rather than ignorance. In addition, if children were using only

a human template to understand nonhuman minds, we would expect to see no significant differences among agents in ToM tests. But this is not what we found. Younger children, including those not passing all three tests, nonetheless made significant differentiations among agents. The emerging group even differentiated between God and humans. In addition, answers for God were the most consistent through development—always remaining below the chance mean regardless of age or ToM facility. It may be easier than we realize for children to attribute knowledge to God, or to invisible friends, before and after children appreciate the constraints on human knowing.

We are not suggesting that children never use their understanding of humans to reason about God or nonhumans generally. It could even be that when some children learn that humans are limited in their knowledge, they apply this new awareness to God or other nonhumans. Lane et al. (2010) argued that there still could be an active period of anthropomorphism that age grouping masks. In our study, however, only two of the 12 children who attributed perfect ignorance to a visible friend (i.e., scored 3s) completely anthropomorphized God in this respect (i.e., also scored 3s for God). These two children were the only ones attributing full ignorance to God among all the children and, perhaps consistent with Lane et al.'s claims, they were the two youngest of the Robust ToM group, both 4-year-olds (49 and 53 months). So we cannot rule out the possibility that some children do overextend human (or canine) limits on knowledge to God, or that confusion as to God's nonhuman properties exist for some children. There could be a type of U-shaped curve (Gardner & Winner, 1982; Karmiloff-Smith, 1992; Zelazo, 2004) at work, typical of much learning and development in childhood, in which new knowledge or new skills are rigidly overapplied at first. On the other hand, pre-5-year-olds scoring 3s for the VF were rare (22 of 25 did not), so the age at which a child understands the limits of human knowledge may also be a factor. More research is needed here, ideally, longitudinal studies tracking several moments in a child's development to determine specifically when a ToM emerges for each child and how they treat various agents at those moments.

Even so, again it is striking that answers for God were the most consistent across the groups. If there is an anthropomorphic moment for some children, it is short lived. Whether there is a U-shaped curve at work or not, the remarkable story continues to be that preformal operational children can so easily imagine a perspective that knows what humans cannot and that preconcrete operational children so easily differentiate kinds of knowledge among various types of agents. Children of this age are not bound to treat all intentional agents as having the same minds as ordinary humans. Imaginary companions underline the point.

One way to interpret data summarized by Barrett and Richert (2003) is that young children have a strong tendency to anthropomorphize other minds (including God) but that at 3 years old, anthropomorphism leads to attributing knowledge on these ToM tasks. As they develop a better understanding of false beliefs and mistaken perception, this tendency to anthropomorphize involves attributing ignorance on these tasks to others, including God, but such a pattern is masked by rigorous cultural indoctrination about God "knowing everything." Lane et al.'s (2010) data are consistent with such an interpretation. Such an account, however, cannot accommodate our data concerning invisible friends. Even without adults telling them the properties of their personal invisible friends, the young children of our study appeared biased toward attributing knowledge even to them. The younger children treated them indistinguishably from God during the early years, and still significantly more knowing than ordinary visible friends in the 5 years

and older group. Of importance, a tendency to attribute knowledge to the invisible friend was found even among children with a robust, representational ToM and without the kinds of cultural reinforcement or religious education that ideas about God enjoy.

Concerning whether God is just another invisible friend, the answer would seem to be "no." On this front, Taylor appears right—they are different, at least among the older children and those who passed all three ToM tests. Yet the Singers/Jaynes may still have a point, especially when considering the younger children. There still could be cognitive connections between invisible friends and an invisible God. The fact that children are able to imagine and engage invisible agents at all is perhaps a sign of how primed children are to sense agency in the world around them, whether seen or not, and be in relationship with it. This is at least interesting given that most religions one way or another deal in relating to unseen realities. The 4-year-olds are particularly intriguing on this front. In our study they treated God and IFs very similarly, answering significantly different from chance for both that they did have knowledge (whereas dogs and VFs did not differ from chance), and they treated God and IFs as significantly different from dogs. These 4-year-olds were beginning to make distinctions in who can know what and even able to "represent and reason about immaterial individuals," as Keleman (2004, p. 297) put it. For these children, mental agency and knowledge were not necessarily tied to physical bodies. It could even be that not being constrained by bodies makes God and IFs less constrained in what they may know.

It could also be that intense imaginative play serves a role, helping children sort out various kinds of agency, knowledge, and perspectives, including those attributed to God. In light of Taylor and Carlson's (1997) discovery that "high pretending" 4-year-olds, especially those with IFs, performed significantly better at ToM tasks than "low pretending" children, it may be that IFs, and pretend play generally, allow children to practice and play with taking various points of view outside their own, fine-tuning what bodily bound creatures can know in relation to immaterial agents.

In the developmental end, IFs wound up in ambiguous cognitive territory. Older children treated them as different from God but also as different from humans or dogs. That is, IFs were more likely to know things and not have their knowledge so easily constrained. Perhaps such ambiguity is itself an important aspect of the religious mind—a liminal space where things are and are not, are known while not seen, where physical limits do not hold completely. The closest comparison to this study may be Knight's (2008) research among Yukatek Mayan children in Mexico. Among children who passed false belief tests he also found God (the Catholic God) was treated differently compared to other agents—humans, animals, the Sun God, and the Masters of the forest (helpful spirits). However, he also found significant difference between the human and animal agents compared to the Sun God and the Masters of the forest, much like our finding with IFs. Unlike IFs, however, these agents are culturally passed on. The same distinction could be made between IFs and Santa or the Easter Bunny or the tooth fairy. For the most part, the IFs of the children we interviewed, according to parents, were unique and not simply cultural figures adopted by the child.

It appears then that somewhere between ideas about a limited humanity and an all-knowing God, there is room in our cognitive lives for something in-between. Perhaps this is the territory of saints and angels or the spirits of those who have died, or special friends nobody else can see. These invisible entities—whether generated individually or easily learned—know things that ordinary humans cannot.

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