

DOSSIER

# Sorting through, and sorting out, anthropomorphism in CSR

Classificando e escolhendo, o antropomorfismo na CCR

K. Mitch Hodge<sup>1</sup>

## ABSTRACT

This article reviews and discusses the various ways by which researchers in the cognitive science of religion have empirically demonstrated that neurotypical humans (a.k.a., the folk) represent supernatural agents through the cognitive analogical processes of anthropomorphism. These include attributing a human-like mind, human-like physical and mental limitations, and human-like sociability. Additionally, the article points to several problematic issues that CSR must needs address, such as how to better demarcate when the folk are anthropomorphizing versus simply attributing agency, and how CSR's insistence that the folk represents supernatural agents as disembodied minds places it at odds with the overwhelming and devastating evidence to the contrary.

**Keywords:** anthropomorphism, supernatural agent representations, theory of mind, embodiment.

## RESUMO

Este artigo revê e discute as várias maneiras pelas quais os pesquisadores da ciência cognitiva da religião (CCR) demonstraram empiricamente que os seres humanos neurotípicos (também conhecidos como *folk*) representam agentes sobrenaturais através dos processos analógicos cognitivos do antropomorfismo. Estes incluem a atribuição de uma mente humana, limitações físicas e mentais humanas e sociabilidade humana. Além disso, o artigo aponta para várias questões problemáticas que a CCR deve abordar, por exemplo, como demarcar quando as pessoas estão antropomorfizando versus simplesmente atribuindo agenciamento, e como a insistência da CCR de que o *folk* representa agentes sobrenaturais como mentes desencarnadas o coloca em desacordo com a esmagadora e devastadora evidência do contrário.

**Palavras-chave:** antropomorfismo, representações de agentes sobrenaturais, teoria da mente, incorporação.

## Anthropomorphism and supernatural agents

We live in a world that is increasingly anthropomorphic. As our technological prowess increases, we find ourselves more and more interacting with inanimate objects as if they were human. Our cars talk to us, see for us, and even make operating decisions for us. Our various compu-

<sup>1</sup> Queen's University Belfast.  
Institute of Cognition & Culture.  
2-4 Fitzwilliam Street, Belfast, BT7  
1NN, Northern Ireland, UK. E-mail:  
kmitch.hodge@gmail.com

tational devices anticipate our psychological needs and supply us with an endless stream of socially relevant information and content fulfilling those needs. Our televisions “get to know us” and recommend programs which match our interests. Our refrigerators can do our grocery shopping for us.

Seeing the world anthropomorphically, however, is nothing new to humans (Boyer, 1996; Epley *et al.*, 2007; Guthrie, 1980, 1993, 2007; Mithen and Boyer, 1996; Severson and Lemm, 2016; Urquiza-Haas and Kotrschal, 2015; Waytz *et al.*, 2014; Waytz *et al.*, 2010a; Waytz *et al.*, 2010b). Anthropomorphizing the world—its events, objects, and creatures—makes it a less scary, more familiar place. For instance, consider the teddy bear. We have taken one of the world’s apex predators and turned it into a child’s toy. In doing so, we stripped away its vicious features designed by evolution to violently kill and replaced those with human infant-like characteristics. The teddy bear is intentionally crafted to have those human infant-like facial characteristics. It has a round, flattened face, accompanied by a snub nose, a narrow mouth with no visible teeth, a large forehead, and large eyes with large sclera. This anthropomorphism serves a specific purpose: to make the toy endearing to humans (Hinde and Barden, 1985). Anthropomorphism allows us mentally to tame the wildest and scariest creatures.

Anthropomorphism is the analogical cognitive modeling process by which we take that which is most intimately familiar to us, *ourselves*, and project those characteristics onto unfamiliar events, objects, and beings in the world. We undertake this modeling process for a variety of reasons: to understand better and to predict our environment; to feel a modicum of control over events and things which are (in reality) out of our control; to engage in social relationships with nonhuman things and beings; among others. In these roles, anthropomorphism looms large in religion, particularly in the representation of supernatural agents (Epley *et al.*, 2007; Guthrie, 1980, 1993; Hodge, 2006; Urquiza-Haas and Kotrschal, 2015).

Supernatural agents are themselves a broad category displaying a wide diversity across time, cultures, and religions. There are supernatural agentive personifications of inanimate objects and forces: such as is prevalent in the Japanese Kami and Greek mythology; supernatural beasts such as Cerberus, Pegasus and Ammit; mixtures of gods, humans and beasts such as the Minotaur, Anubis, Garuda, and Ganesh; divine and human mixtures, such as Heracles, the Jade Emperor, Dionysus, Buddha, and Jesus; and wholly divine beings such as Ra, Zeus, Vishnu, and the Christian God, Yahweh. An additional group of supernatural agents is the afterliving deceased—humans who have survived their own death and reside in an afterlife.

As one would expect, how neurotypical humans (hereafter: the folk) represent supernatural agents is a central issue in the cognitive science of religion (CSR) and understanding those representations centers around anthropomorphism. Yet, anthropomorphism is a confusing and often confused

topic in the CSR. There are two overarching theories: either supernatural agents are produced by cognitive processes which lead to anthropomorphic supernatural representations, or they do not. Much of this debate revolves around two additionally divergent views: either folk supernatural agent concepts are anthropomorphic because they attribute human-like limitations to the divine, or supernatural agents are not anthropomorphic because they do not share our limitations. Moreover, there are additional squabbles over how these characteristics the folk put upon their gods are agent-, human-, or person-like.

In this article, I will discuss the empirical evidence collected thus far by CSR researchers and the various ways by which these researchers suggest that the folk anthropomorphically (or not) represent supernatural agents. Additionally, I will attempt to clear up confusions about anthropomorphism that I think are harming CSR’s efforts to explain supernatural representations, especially regarding the embodiment of supernatural agents. I will demonstrate that anthropomorphism, in all of its variations (including those not presently considered in CSR), gives us a much clearer picture of how the folk represents supernatural agents.

There are numerous ways uncovered and discussed in CSR by which the folk anthropomorphize things—real and imagined—in their environment. The ways that I discuss here are not meant to be exhaustive. Instead, I have chosen the ways which are most commonly discussed in CSR and those which are deeply problematic, such as CSR’s ham-fisted rejection of embodiment for supernatural agents. These ways are anthropomorphism *qua* human-like: agency, minds, limitations, sociability, and bodies. I will address each of these ways of anthropomorphizing in order, pointing out the evidence for them, the potential or actual problems they face, and areas for potential research.

## Anthropomorphism *qua* human-like minds

An obvious and fundamental question that arises in discussions of anthropomorphism in the context of religions is how to distinguish it from attributing agency to a thing—that is, animism (Epley *et al.*, 2007; Shaman *et al.*, 2018; Waytz *et al.*, 2010a). Whatever the empirical difference between the two might be, it will surely not be a difference in kind. Humans are agents among the vast world of agents. This is only to say two things: (1) that not all agency attributions are anthropomorphism; and (2) that looking for any wholly unique anthropomorphic characteristics—that is, a trait that humans do not share to any degree with any other animals—is likely a fool’s errand. Nevertheless, in the mythologies of religions, humans are set apart from animals. Thus, from the folk’s perspective, it is a difference in kind. Now that that is said, let’s forget that I said it and discuss attributions that are often considered uniquely human.

By attributing a human-like mind, anthropomorphism requires ascribing a human-like psychology to the thing being anthropomorphized. There are several different aspects of human psychology which could be anthropomorphized onto supernatural agents: perceptual agency, intentional agency, emotional states, higher-order intentionality, moral agency, and aesthetic agency.<sup>2</sup> All of these, save aesthetic agency, have been demonstrated through experimental studies in CSR to be attributed to supernatural agents by the folk. I will discuss each of these in order.

Humans, like most animals, are not simply passive perceivers, we are perceptual agents—meaning, our perceptions of the world are not neutral; perceiving is “perceiving as.” It is the difference between seeing another animal and seeing a potential predator, food, mate, or rival. It is the difference between hearing sounds and hearing a predator, a baby’s cry, language, or music. It is the difference between seeing an L-shaped object and seeing a potential place to sit. This perceptual agency is a fundamental aspect of the human mind (Gibson, 2015 [1979]; Guthrie, 1980, 1993; Hodge, 2006; Shepard, 1984).

Experimental studies conducted in CSR examining how the folk anthropomorphizes supernatural agents by representing them with human-like perceptual abilities have proven to be a mixed bag. Whereas participants are recorded regularly attributing visual and auditory perception to supernatural agents, olfactory, tactile, and gustatory senses are far less frequently attributed to them (Bek and Lock, 2011; Bering, 2002; Bering *et al.*, 2005; Nyhof and Johnson, 2017; Shtulman, 2008; Shtulman and Lindeman, 2016; Watson-Jones *et al.*, 2017) save when the participants are imagining themselves as surviving their own deaths in an afterlife (Pereira *et al.*, 2012). This may, however, be an artifact of how the perceptual questions are asked (Hodge, 2012; Lane *et al.*, 2016). I will return to this possibility when I discuss anthropomorphism *qua* human-like bodies in a later section.

Humans are not simply perceptual agents; they are intentional agents—i.e., they act within their experiential awareness<sup>3</sup> in accordance with belief-desire psychology (Wellman, 2014). This means, in the least, that anything that is anthropomorphized will most often be attributed intentional agency. This does not mean, however, that the thing ascribed intentional agency actually has it. Instead, the ascription of intentional agency to a thing provides the folk a shortcut by which to reason about that thing’s behavior (Dennett, 1989).<sup>4</sup>

As Boyer (2001) suggests, intentional agency is likely the foundation by which to understand supernatural agent

representations. This is because by attributing intentional agency, the folk can avail themselves of a rich array of potential inferences about that being thanks to our theory of mind (ToM). ToM is an anthropomorphizing, analogical, cognitive process which allows us to read the minds of others by attributing to our subject causal, intentional, content-bearing, representational mental states (Griffin and Baron-Cohen, 2002).<sup>5</sup> Regarding the folk’s ascription of intentional mental states to supernatural agents, Boyer (2001, p. 144, *emphasis original*) writes:

*First, note that gods and spirits are not represented as having human features in general, but as having minds, which is much more specific. People represent supernatural agents who perceive events, have thoughts and memories and intentions. But they do not always project other human characteristics, like having a body, eating food, living with a family or gradually getting older. Indeed, anthropologists know that the only feature of humans that is always projected onto supernatural beings is the mind.*

Some might be tempted to think, as many in CSR have been prone to do, that ascribing intentional agency, in the least, is a requirement for anthropomorphism, especially with regard to supernatural agents. Certainly, one would be hard-pressed to think of a supernatural *agent* which does not have a mind in the sense of having intentional agency. Immediately following that quote, however, Boyer (2001, p. 144) is quick to point out that not all minds are human minds and that intentional agency alone will not get you to a human mind. He also suggests there, and rightly so, that not all supernatural agents have a human-like mind, even though they may be attributed intentional agency.

Moreover, it is *not always* the potential attribution of a mind to an entity, supernatural or otherwise, that anthropomorphizes that entity. Consider the teddy bear again. Even though it has human infant-like facial characteristics, one does not, *ceteris paribus*, attribute intentional agency to the teddy bear as well. This does not mean that one cannot apply ToM to the teddy bear if they so choose; rather, it simply means that ToM inferences are not the target domain of the anthropomorphizing analogy in such cases. Likewise, when it comes to supernatural agents, ascribing to them an intentional, belief-desire psychology is *not always* the point. For instance, even though Ammet, the Egyptian crocodile-headed

<sup>2</sup> I have not included subjectivity in this list of uniquely human psychological characteristics because, as I see it, self-awareness is required for higher-order intentionality, moral agency, and aesthetic agency.

<sup>3</sup> Experiential awareness is the cognizance of both one’s internal states (e.g., hunger) and external stimuli from one’s environment (i.e., perceptions). Experiential awareness is strongly linked to embodiment.

<sup>4</sup> This ability requires higher-order intentionality, which I discuss below.

<sup>5</sup> The goal of ToM, however, is not merely to mindread. The goal is to understand and to predict the behavior of the thing (as a whole entity) toward which we are applying our ToM.

god with the body of a lion and hippopotamus combined, who devoured the souls of those Egyptians Anubis found unworthy, had intentional agency, it was not her intentional agency that made her religiously relevant. Likewise, the supernatural agents The Bull of Heaven from *The Epic of Gilgamesh*, the Minotaur, Cerberus, and Pegasus from Greek mythology, dragons and the leviathan from *The Bible*, and the winged-horse Buraq who carried Mohammed into the heavens are not relevant to their religious narratives because of what the folk might glean by applying ToM to them. As I will discuss in later section, however, this does not mean that those supernatural beasts are not anthropomorphized. Yet even though intentional agency may not be foremost anthropomorphizing attribute of the supernatural agent, numerous experimental studies in CSR that have shown that the folk, beginning in childhood, both implicitly and explicitly attribute intentional agency to supernatural agents: this includes the afterliving deceased (Astuti and Harris, 2008; Bek and Lock, 2011; Bering, 2002; Bering *et al.*, 2005; Gray *et al.*, 2011; Harris and Giménez, 2005; Huang *et al.*, 2013; Pereira *et al.*, 2012; Watson-Jones *et al.*, 2017) and the gods and other supernatural beings (Haslam *et al.*, 2008; Heiphetz *et al.*, 2016; Lane *et al.*, 2010; Ma-Kellams, 2015; Moriguchi *et al.*, 2018; Shaman *et al.*, 2018; Shtulman, 2008; Shtulman and Lindeman, 2016). But again, attributing intentional agency on its own is not specifically anthropomorphizing the entity.

Another staple of human psychology is our emotions (Damasio, 1994, 1999). Like intentional agency, emotional states are frequently anthropomorphized onto things—real or imaginary—in our environment to aid in our understanding and predicting of those things' perceived behavior. These range from base emotions such as attachment, excitement, anger, disgust to more subtle emotional states such as love, happiness, sadness, contentment, and boredom. Emotional states are routinely and robustly anthropomorphized to supernatural agents by the folk as several studies in CSR have shown (Bering, 2002; Bering and Bjorklund, 2004; Emmons and Kelemen, 2014; Haslam *et al.*, 2008; Shtulman and Lindeman, 2016).

Attributing a human-like mind to a supernatural agent requires the folk to attribute more than emotions and intentional agency (Gervais, 2013). We share those mental attributes with, or at least project it onto, a host of other events, objects, and entities—either real or imagined—in our environment. There are several mental characteristics by which one can say that the human mind is unique. The first is higher-order intentionality, or the ability to represent the thoughts of others *via* our ToM.

Humans are higher-order intentional agents. We are not only capable of recognizing our own intentional states but, additionally, “reading” the intentional states of others in relation to our own. At the very least, ToM assumes that the mind the folk are reading operates by a similar belief-desire psychology by which their own do. Many supernatural agents, across religious cultures, are attributed higher-order intentionality

by the folk. This means that these supernatural agents too can use ToM to read minds—the folk's minds. But, not only can they read the folk's mind, many such supernatural agents are also believed to have privileged epistemic access to the folk's minds and to their most secreted contents (Bering and Johnson, 2005). Because of this, supernatural agents are said to have socially strategic information (Boyer, 2001; Purzycki, 2013; Purzycki *et al.*, 2012). This a potentially harrowing proposition given the next uniquely human mental feature commonly anthropomorphized onto supernatural agents.

In addition to being higher-order intentional agents, humans are moral agents. The folk guides their actions by ethical principles of right and wrong. Moreover, the folk judges the actions of other moral agents as right or wrong (Greene, 2003; Knobe, 2010). These are mental exercises that the folk generally do not ascribe other animals, aside from perhaps, certain pets (de Waal, 2009; Deane-Drummond, 2009; McGinn, 1995; Sapontzis, 1980). It is difficult how, for example, we would call a bear a moral agent. We would not hold a bear morally responsible for its behavior, even if it were to kill a basket full of kittens. The folk usually reserves the ‘moral agent’ ascription for things like themselves. Thus, to the extent to which the folk might ascribe moral agency to a supernatural agent, they can be said to anthropomorphize that supernatural agent.

Across many religions, moral supernatural agents have privileged epistemic access to the folk's mental content. This means that these supernatural agents not only know the folk's most secreted thoughts and desires, they have also borne witness to their behaviors. Moralizing supernatural agents use this socially strategic information to morally judge the folk's lives. Yet, not only do these supernatural agents morally judge the folk, they also dispense rewards and punishments to the folk according to those judgments. Although it is difficult nowadays to imagine religion without such moralizing supernatural agents such as the Judeo-Christian-Islamic God, this appears to have been a recent (in evolutionary terms) development in human culture: only since the rise of axial religions. Their arrival in the folk's imagination created monumental cultural changes and upheavals. Moralizing supernatural agents facilitated the move from small hunter-gatherer familial groups to large-scale human societies which they policed as overseer, protector, and punisher. The belief in moralizing supernatural agents promoted universal cooperation across diverse human populations, overcoming geographical and linguistic barriers. Anthropomorphically projecting morality onto supernatural agents changed the very nature of human culture and social organization (Baumard and Boyer, 2013; Johnson, 2016; Norenzayan, 2013, 2016; Roes and Raymond, 2003; Rossano, 2007, 2010).

In addition to being perceptual, emotive, higher-order intentional, moral agents, humans are also higher-order aesthetic agents. Many things in nature are capable of creating something beautiful, but most of those creators (if not all, save humans) are incapable of appreciating beauty. Moreover,

among the animal kingdom, humans are the only ones that create something beautiful merely for the sake of that beauty (i.e., art). To the extent to which we might attribute higher-order aesthetic agency to a supernatural agent, we can be said to be anthropomorphizing that agent. To date,<sup>6</sup> there are no studies in CSR which explore the extent to which the folk attribute supernatural entities with aesthetic agency either in the role of appreciating or creating beauty for itself, even though numerous examples of ascribing aesthetic agency to supernatural agents, both as creator and as appreciative of beauty, are found in religious mythologies across the globe.

## Anthropomorphism qua human-like limitations

Some scholars in CSR have argued that the folk anthropomorphizes a supernatural agent when they place human-like limitations upon it. The idea behind this is that religious theologies dehumanize some gods. This is achieved in two ways: first, gods are stripped of human-like traits such as embodiment and gender; and second, they are ascribed a number of *un*human-like abilities such as immortality, omniscience, omnipotence, omnipresence, and omniperception.<sup>7</sup> These are deemed the theologically correct representations of certain supernatural agents such as the Judeo-Christian-Islamic God and the Hindu god Brahman. When the folk reapplies these human-like limitations, such as applying human-like limited perceptual abilities to these gods, they are anthropomorphizing them. Anthropomorphized representations of these deities are said to be theologically *incorrect* representations (Slone, 2007).

This idea of folk anthropomorphism was pioneered by Barrett and colleagues (Barrett, 1998; Barrett and Keil, 1996; Barrett and VanOrman, 1996) in a series of experimental studies. In their most influential studies (Barrett and Keil, 1996; Barrett, 1998) conducted with American Christians and Indian Hindus, participants were presented a narrative about a divine being (God or Brahman, respectively) answering a prayer which was neutral with regard to time and space and perceptual abilities in relation to that deity (although see criticisms of the experimental paradigm and interpretation by Nikkel, 2015; Shtulman, 2008; and Westh, 2013). In a later part of the study, the participants were asked by the researchers to recount the narrative they had heard. Again, although the initial narrative was neutral regarding time, space, and perceptual abilities for the deity, when the participants recalled and retold the narrative, the deity was subject to the same restrictions of time and space—occupying a

single location in space and attending to events sequentially through time—as well as having limited perceptual abilities similar to us humans. Thus, Barrett and colleagues claimed, when the folk likewise attribute these human-like limitations to these supernatural agents, they are providing an anthropomorphized, theologically incorrect representation. This view of anthropomorphism toward supernatural agent concepts has been widely influential in CSR as it has surreptitiously appeared and been adopted in much subsequent research (Barrett, 2012; Barrett and Richert, 2003; Barrett *et al.*, 2001; Heiphetz *et al.*, 2016; Heiphetz *et al.*, 2018; Knight *et al.*, 2004; Lane *et al.*, 2010; Shtulman, 2008; Shtulman and Lindeman, 2016; Slone, 2007). This is largely because CSR researchers have retained a near laser focus on the Judeo-Christian-Islamic God to the neglect of all others. This is potentially problematic for CSR's contributions in understanding supernatural agent representations inasmuch as just a few supernatural beings amongst a host of thousands across world religions are ascribed such limitless powers.

Another group of CSR scholars argues that God concepts themselves are not, contrary to received wisdom (Piaget, 1929), based on anthropomorphism but rather on a general intentional agent conceptual template which does not assume any human-like limitations on the agent given that, in our evolutionary environment, agents come with a variety of nonhuman-like abilities (Barrett and Richert, 2003; Barrett *et al.*, 2001; Knight *et al.*, 2004; Richert *et al.*, 2016a; Richert *et al.*, 2016b; Richert and Smith, 2010; Shtulman and Lindeman, 2016). God is nonhuman-like inasmuch as it is not restricted by a body, time, or space. Moreover, God is immortal, all-knowing, and is not limited in its perceptual capabilities. Thus, “concepts of God are easily accommodated [by the general intentional agent template] because they play upon these default assumptions rather than violate them” (Barrett and Richert, 2003, p. 301). Thus, when the folk places human-like limitations on God, they are anthropomorphizing it because they are applying a specifically human-like limitation from a human-like agent template rather than from a general intentional agent template. This idea, however, has not gone unchallenged (Hodge and Sousa, *in press*; Lane *et al.*, 2010; Lane *et al.*, 2012).

## Anthropomorphism qua human-like sociability

Stewart Guthrie (1980, 1993), one of the pioneers of CSR, went as far as to claim that religion is anthropomorphism. Guthrie's anthropomorphism theory of religious supernatural

<sup>6</sup> Of which I am aware at the time of writing this (Sept. 2018). Shaman *et al.* (2018) came close to broaching this topic when they queried participants about God's ability to engage in pretense with an imaginary friend, but the question was too narrowly focused to shed light on God's potential for aesthetic agency.

<sup>7</sup> In other words, these supreme high-gods are not and should not be conceived through or by applications of folk physics, folk biology, or folk psychology (Shaman *et al.*, 2018).

agent representations leaves the door wide open regarding what physical, biological, psychological, and social human-like attributes the folk might attribute to religious entities. Nevertheless, he does stress that human-like symbolic and social interactions such as language use, reciprocity, and social roles, and relationships are the most common and important properties anthropomorphically projected upon supernatural agents. The religious folk shares with their gods a common language, common rituals, and a common social structure.

Anthropomorphizing supernatural agents with human-like psychology allows the folk to view them as potential social inter-actors (Boyer, 2001; Green, 2015).<sup>8</sup> Social interaction, whether natural or supernatural, requires intentional, mental, and physical interaction (Hodge, 2011a, 2011b, 2016). This puts supernatural agents in line with Boyer's (2001, p. 138, emphasis original) description of supernatural agents as social inter-actors and why and how the folk (at-tempt to) interact with them:

*Also, what is a constant object of intuitions and reasoning are situations of interaction with these agents. People do not just stipulate that there is a supernatural being somewhere who creates thunder or that there are souls wandering about in the night. People actually interact with these beings in the very concrete sense of doing things to them, experiencing them doing things, giving and receiving, paying, threatening, protecting, placating and so on.*

Epley *et al.* (2007) too argue that anthropomorphism is, in part, motivated by our desire to socially interact with the world. Additionally, studies conducted by Richert *et al.* (2016b) show that children and parents who are taught that prayer serves a symbolic and social interaction with God—as opposed to simply making the person think about God—were significantly more likely to anthropomorphize God.<sup>9</sup>

It is not necessary, however, that the thing being anthropomorphized be attributed human-like psychological characteristics to be in social relationships with humans (Orr, 2015). This is witnessed in both the natural and supernatural realms of the folk: crocodiles, as a threat to livestock and life and limb, are a threat to one's wealth and status; dogs provide labor, protection, and companionship; dragons are mythologically depicted across many religions, including Christianity, Hinduism, and Buddhism, as existential threats to society it-

self, or as protectors of things with great social significance; Ammit devoured dishonest Egyptian souls; Pegasus bestowed status upon Poseidon (as the patron god of horses) and Belerophon (as Pegasus's rider into battle), as did the winged-horse Buraq who carried Mohammed to the heavens; Humbaba protected the Cedar Forest where the Mesopotamian gods lived; Cerberus guarded the entrance to Hades so that the living could not enter and the dead could not leave; and so forth.<sup>10</sup> The point is that it is not always a mind that makes a supernatural agent socially relevant, nor is it reading that agent's mind (*via* ToM) that makes it socially interesting.<sup>11</sup>

## Anthropomorphism *qua* human-like bodies

Irrespective of which religion one examines, religions are replete with hosts of supernatural agents represented with human-like bodies. There are the jinn, angels, and demons in Islam, winged-angels in Christianity, and the Kami in Shintoism. In Hinduism, hundreds, if not thousands, of gods are represented with human-like forms: Krishna, Ganesh (albeit with an elephant head), Shiva, just to name a few. Likewise, there are the buddhas, the bodhisattvas, and the wrathful deities in Buddhism who too have human-like bodies. In ancient religions, the Mesopotamian, Egyptian, Greek, Roman, Gaelic, and Norse pantheons are all populated by gods with descriptively distinct, gendered, human-like bodies. Even a brief consultation with dictionaries and encyclopedias (Coulter and Turner, 2012; Ellwood and Alles, 2007; Jones, 2005; Jordan, 2004; Levinson, 1994; Lewis, 1994; Lurker, 2004; Taylor, 2000) describing religious beliefs and representations of supernatural agents as well as the *Electronic Human Relations Area Files*<sup>12</sup> will confirm that, cross-culturally, the dominant representation of supernatural agents is with a human-like body. Additionally, the afterliving deceased too are represented across world religions, past and present, as retaining their human-like physique (Hodge, 2008).

It is this religious fact, however, that *most imperils the relevancy of CSR's research into supernatural agents and anthropomorphism*. This is because the one characteristic upon which CSR researchers agree is that the folk represent supernatural agents as wholly disembodied beings despite *the vast, overwhelming, and devastating evidence* against this folk representation (for examples of this widespread agreement in CSR, see Bering, 2010; Boyer, 2001; Cohen *et al.*, 2011; Gervais, 2013;

<sup>8</sup> Not "interactors" in the Darwinian sense.

<sup>9</sup> In this study, at least with regard to psychological attributions, anthropomorphism amounted to placing human-like limitations on God.

<sup>10</sup> This is without explicitly addressing a widespread phenomenon often absent from CSR accounts, totemism. Totemism provides social significance and the possibility of social interaction with a diverse variety of natural objects and non-human agents in the world.

<sup>11</sup> Supernatural agents such as these are counter-indicative of Boyer's proposal (from p. 3) that the folk *always* project minds onto supernatural agents. Moreover, while it might be the case that these natural and supernatural creatures have minds, they are not human-like minds. What makes them interesting and human-like (anthropomorphized) is the social roles that they fulfill.

<sup>12</sup> eHRAF World Cultures Database. Human Relations Area Files. Available at: <http://ehrafworldcultures.yale.edu>

Gray *et al.*, 2011; Norenzayan, 2013; Purzycki and Willard, 2016; Shtulman and Lindeman, 2016). This is because CSR researchers are firmly convinced that the folk are intuitive mind-body dualists, seeing the mind as the immaterial carrier and conveyor of our mental lives and personal identity, and wholly separate and independent from our physical bodies. In another recent work, a colleague and I (Hodge and Sousa, 2018) expose what we see as deep flaws in the dualistic, disembodied interpretation of supernatural agent representations. This paradigm claims that supernatural agents, across the array of religions, are represented by the folk as wholly immaterial, disembodied mental entities. We argue that there were numerous reasons why this interpretation was flawed: confusing the supernatural agents' lack of a physical body with the lack of an imagined one; confusing the concept INVISIBLE with DISEMBODIED; overinterpreting ToM; and failing to recognize the folk's ontological and functional distinctions between the mind and the soul. The most devastating problem as we see it, however, is the fact that this dualistic, disembodied interpretation of folk supernatural agent representations impressively fails to account for supernatural agent representations as they are found in religions across the world. In other words, the wholly immaterial, mental supernatural agents supposedly discovered in the CSR researcher's laboratory look nothing like the panoply of human-like embodied supernatural agents recorded across the time and space of human religious cultures by archaeologists, anthropologists, and religious scholars.<sup>13</sup>

There are three additional reasons I wish to discuss here as to why I believe that CSR has taken this treacherous wrong turn in explaining supernatural agent representations: an over-attribution of folk dualism, an artefact of the questions being asked participants in studies probing potential embodiment of supernatural agents, and mistakenly thinking that representing a supernatural agent with a human-like body requires representing *all* of a human body's features. I will take each of these in order.

CSR researchers have an undue overcommitment to intuitive folk mind-body dualism to the extent where some have declared it settled science (Purzycki and Willard, 2016; White *et al.*, 2017).<sup>14</sup> Intuitive folk mind-body dualism is the theoretical proposal that the folk, by intuitive default, views themselves as minds who inhabit bodies (Bloom, 2004). Their bodies are wholly accidental to their nature and personal identity, and the folk believe they are wholly capable of continuing to exist beyond the death of their body as disembodied minds. This claim is the theoretical interpretation of numerous studies by CSR researchers in which participants show a significant bias for attributing epistemic, emotional,

and desirous psychological properties to the afterliving deceased over biological, psychobiological, and perceptual properties (Astuti and Harris, 2008; Bek and Lock, 2011; Bering, 2002; Bering *et al.*, 2005; Gomes *et al.*, 2016; Gray *et al.*, 2011; Huang *et al.*, 2013; Lane *et al.*, 2016; Sebestény and Emmons, 2017; Watson-Jones *et al.*, 2017). Likewise, this bias is demonstrated in experimental studies of the folk's representation of gods and interpreted by researchers as evidence of intuitive folk mind-body dualism, even though the wholly immaterial, independent minds attributed to the supernatural agents in these studies are not specifically human-like (Haslam *et al.*, 2008; Nyhof and Johnson, 2017; Shaman *et al.*, 2018; Shtulman, 2008; Shtulman and Lindeman, 2016).

Several CSR scholars, however, have argued that the intuitive folk mind-body dualism theory is not directly demonstrated, highly interpretative, prematurely accepted, or just down-right wrong (Chandler and Dunlop, 2015; Hodge, 2008; Hodge and Sousa, 2018; Horst, 2016; Lindeman *et al.*, 2002; Nikkel, 2015, 2018; Rottman and Kelemen, 2011). One of the reasons I propose underlies these experimental findings is that the folk, *ceteris paribus*, are far more interested in the mental lives of others than they are in the mundane bodily states and functions of others. It is contemplating the thoughts, beliefs, and desires of others that provides the folk a better way to gauge and predict those others' behaviors than ruminating over the others' caloric intakes and digestive systems (Hodge, 2012, 2016, 2018). Moreover, it is the former states, rather than the latter, that determine the fates of our social interactions with those others. Thus, it is little surprise that the folk also demonstrate this strong bias in their supernatural agent representations.

The second reason that underlies these experimental findings is methodological. It is the result of the types of questions asked by CSR experimenters. The participants are asked whether they represent the biological states and processes of supernatural agents such as hunger, digesting, growing, having a heart, sleeping, getting ill, and the like. Given that these supernatural agent representations are imaginative, and that we rarely, *ceteris paribus*, imaginatively represent our living conspecifics with those biological features, it is little wonder that they do not appear in supernatural agent representations. It is all too easy to forget that the representation of supernatural agents is an imaginative endeavor. This leads me to my next point.

Attributing human-like physical features to an anthropomorphized thing does not mean that *all* human-like physiology must be attributed to the thing. This is where some CSR empirical studies into the anthropomorphism of supernatural agents run awry. The researchers implicitly assume

<sup>13</sup> We do not dispute the evidence gathered in these experimental studies, but rather the theoretical and methodological assumptions by which that evidence is interpreted by CSR researchers. For additional criticisms of this interpretation as it is specifically applied to the afterliving deceased, see Hodge (2008, 2011b, 2012, 2018).

<sup>14</sup> Boyer's (2001) claim that supernatural agents are *always* attributed minds has been strongly influential in this misplaced confidence as well.

that if one is physically anthropomorphizing a supernatural agent, then one must attribute *all* human-like physiological features to that thing at all times and at once (for examples of researchers proposing such [mis?]readings of both Guthrie's (1980, 1993) anthropomorphism theory of supernatural agents, see De Cruz (2013) and Shaman *et al.* (2018) and likewise Boyer's (2001) PERSON template as applied to supernatural agents, see Shtulman (2008) and Shtulman and Lindeman (2016)). It would be cognitively overwhelming—not to mention violating *all* the principles of cognitive economy (Boden, 2006; d'Andrade, 1995; Hodge, 2006; Lambert and Chasteen, 1999; Medin and Ortony, 1989; Michalski, 1989)—if, when imaginatively representing a human-like embodied supernatural agent, we had to represent them with all the accompanying viscera, effluvia, skeleton, musculature, belly-button, and all.<sup>15</sup> Moreover, there is no reason to think that the folk does so. We do not build our imaginative representations of others—whether real or fictional—from the individual cells on up. On the contrary, we only imaginatively supply them with the body parts necessary to recognize them as the person they are and to carry out whatever, usually socially-relevant, activity we are imagining them undertaking. I have called this imaginative representation “social embodiment” (Hodge, 2008, 2011a, 2011b, 2016).

With a social embodiment thesis of supernatural agents in mind, a different set of questions need to be asked to determine the extent to which the participants are imaginatively representing supernatural agents with human-like bodies. For instance, questions such as “Does she (in the afterlife, for example) smile when she sees her loved ones?” and “Can he hug his loved ones with him in the afterlife?” and “Does she (a goddess, perhaps) shed a tear when she sees needless suffering?” These questions, I believe, would fare much better in eliciting from participants the nature and extent of their human-like bodily representations of supernatural agents.

Moreover, the social embodiment thesis has gained some initial empirical support. De Cruz (2013) found that participants given a structured imagination task were significantly more likely to represent (alien) supernatural agents according to the social embodiment thesis than by the intuitive folk mind-body dualism driven hypothesis of disembodied mind supernatural agent representations or representing the supernatural agents with all the features of human bodies (guts and all). Additionally, Lane *et al.* (2016) found that participants queried about the mental and physical capabilities of the afterliving deceased *sans* any social context in the questions significantly decreased the attributions they made across the board in accord with the predictions of the social embodiment thesis of supernatural agents (Hodge, 2012).

To reiterate a point which I do not believe can be overstated: *the very relevance of CSR in explaining supernatural agent representations is challenged by researchers' undue overcommitment to intuitive folk mind-body dualism and disembodied mind interpretations of experimental findings* (Hodge and Sousa, 2018; Nikkel, 2015, 2018). CSR's rejection of folk human-like body representations of supernatural agents flies in the face of vast and overwhelming evidence gathered from multiple disciplines and cross-culturally evidenced in religions across the time and space of human existence. Even though arguably it is the case that all supernatural agents are attributed a mind (à la Boyer, 2001), it is not always a human-like mind, and it is not always their mind that makes them religiously and socially interesting. On the contrary, it is often their bodies.

## Conclusion

CSR has demonstrated great potential in exposing, explaining, and understanding folk supernatural agent representations. Specifically, CSR has empirically exposed the numerous ways by which the folk anthropomorphically represent, or not, supernatural agents. The folk can assign to those supernatural agents a human-like mind, social roles, relationships, as well as our mental and physical limitations. By anthropomorphizing the supernatural world, we have made this world more familiar and less frightening. Moreover, by anthropomorphizing supernatural agents as moral agents with social policing roles, we have changed the trajectories of our cultures and societies. Anthropomorphizing the supernatural world has created monumental changes in our own.

CSR still faces considerable challenges in empirically investigating supernatural agent representations, however. Researchers still need to establish, both methodologically and theoretically, a clearer way by which to demarcate when the folk are anthropomorphizing an entity versus simply attributing intentional agency to it. I have suggested a few uniquely human characteristics by which this might be empirically explored, such as examining whether and under what conditions the folk represent supernatural agents with moral, aesthetic, and social agency. All of these are strong candidates given their preexisting representations in world religions. Moreover, I have emphatically called-out CSR for its ham-fisted rejection of embodiment for supernatural agents—whether human-like or not. I have argued that this situation, due to an overcommitment to pet theories, has placed CSR's theory of supernatural agent representations as disembodied minds in direct conflict with the overwhelming and devastating preexisting evidence of how the folk imaginatively, emphatically, and descriptively represent the socially embodied diversity of supernatural agents.

<sup>15</sup> On obvious example of a supernatural agent being represented with internal viscera, however, is Prometheus, whom Zeus chained to a boulder and sent his eagle daily to eat Prometheus's liver as punishment for gifting fire to humans. Nevertheless, in line with the social embodiment thesis of supernatural agents I will be offering, this mythological representation is socially relevant.



## References

- ASTUTI, R.; HARRIS, P.L. 2008. Understanding Mortality and the Life of the Ancestors in Rural Madagascar. *Cognitive Science*, **32**:713-740. <https://doi.org/10.1080/03640210802066907>
- BARRETT, J.L. 1998. Cognitive Constraints on Hindu Concepts of the Divine. *Journal for the Scientific Study of Religion*, **37**(4):608-619. <https://doi.org/10.2307/1388144>
- BARRETT, J.L. 2012. *Born Believers: The Science of Children's Religious Belief*. New York, Simon and Schuster.
- 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. 2003. Anthropomorphism or Preparedness? Exploring Children's God Concepts. *Review of Religious Research*, **44**(3):300-312. <https://doi.org/10.2307/3512389>
- BARRETT, J.L.; RICHERT, R.A.; DRIESENKA, A. 2001. God's Beliefs Versus Mother's: The Development of Nonhuman Agent Concepts. *Child Development*, **2**(1):50-65. <https://doi.org/10.1111/1467-8624.00265>
- BARRETT, J.L.; VANORMAN, B. 1996. The Effects of Image-Use in Worship on God Concepts. *Journal of Psychology and Christianity*, **15**(1):38-45.
- BAUMARD, N.; BOYER, P. 2013. Explaining Moral Religions. *Trends in Cognitive Science*, **17**(6):272-280. <https://doi.org/10.1016/j.tics.2013.04.003>
- BEK, J.; LOCK, S. 2011. Afterlife Beliefs: Category Specificity and Sensitivity to Biological Priming. *Religion, Brain and Behavior*, **1**(1):5-17. <https://doi.org/10.1080/2153599X.2010.550724>
- BERING, J.M. 2002. Intuitive Conceptions of Dead Agents' Minds: The Natural Foundations of Afterlife Beliefs as Phenomenological Boundary. *Journal of Cognition and Culture*, **2**(4):263-308. <https://doi.org/10.1163/15685370260441008>
- BERING, J.M. 2010. *The God Instinct: The Psychology of Souls, Destiny and the Meaning of Life*. London, Nicholas Brealey Publishing, 252 p.
- BERING, J.M.; BJORKLUND, D.F. 2004. The Natural Emergence of Reasoning about the Afterlife as a Developmental Regularity. *Developmental Psychology*, **40**(2):217-233. <https://doi.org/10.1037/0012-1649.40.2.217>
- BERING, J.M.; BLASI, C.H.; BJORKLUND, D.F. 2005. The Development of 'Afterlife' Beliefs in Religiously and Secularly Schooled Children. *British Journal of Developmental Psychology*, **23**:587-607. <https://doi.org/10.1348/026151005X36498>
- BERING, J.M.; JOHNSON, D.D.P. 2005. "Oh Lord...You Perceive My Thoughts from Afar": Recursiveness and the Evolution of Supernatural Agency. *Journal of Cognition and Culture*, **5**(1-2):119-142.
- BLOOM, P. 2004. *Descartes' Baby: How Child Development Explains What Makes Us Human*. London, Arrow Books, 271 p.
- BODEN, M.A. 2006. *Mind as Machine: A History of Cognitive Science*. Vols. 1 and 2. Oxford, Clarendon Press.
- BOYER, P. 1996. What Makes Anthropomorphism Natural: Intuitive Ontology and Cultural Representations. *The Journal of the Royal Anthropological Institute*, **2**(1):83-97. <https://doi.org/10.2307/3034634>
- BOYER, P. 2001. *Religion Explained: The Evolutionary Origins of Religious Thought*. New York, Basic Books.
- CHANDLER, M.J.; DUNLOP, W.L. 2015. Development of Personal and Cultural Identities. In: R.M. LERNER; W.F. OVERTON; P.C.M. MOLENAAR (eds.), *Handbook of Child Psychology and Developmental Science*. 7<sup>th</sup> ed., Hoboken, John Wiley and Sons, vol. 1, p. 452-483. <https://doi.org/10.1002/9781118963418.childpsy112>
- COHEN, E.; BURDETT, E.; KNIGHT, N.; BARRETT, J. 2011. Cross-Cultural Similarities and Differences in Person-Body Reasoning: Experimental Evidence from the United Kingdom and Brazilian Amazon. *Cognitive Science*, **35**(7):1282-1304. <https://doi.org/10.1111/j.1551-6709.2011.01172.x>
- COULTER, C.R.; TURNER, P. 2012. *Encyclopedia of Ancient Deities*. New York, Routledge. 597 p.
- D'ANDRADE, R.G. 1995. *The Development of Cognitive Anthropology*. Cambridge, Cambridge University Press, 272 p.. <https://doi.org/10.1017/CBO9781139166645>
- DAMASIO, A.R. 1994. *Descartes' Error : Emotion, Reason, and the Human Brain*. New York, G.P. Putnam, 352 p.
- DAMASIO, A.R. 1999. *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. San Diego, Harcourt, 386 p.
- DE CRUZ, H. 2013. Religious Concepts as Structured Imagination. *International Journal for the Psychology of Religion*, **23**(1):63-74. <https://doi.org/10.1080/10508619.2013.735495>
- DE WAAL, F. 2009. *Primates and Philosophers: How Morality Evolved*. With Commentary by Robert Wright, Christine M. Korsgaard, Philip Kitcher and Peter Singer. Ed. by S. Macedo and J. Ober. Princeton, Princeton University Press, 209 p.
- DEANE-DRUMMOND, C. 2009. Are Animals Moral? A Theological Appraisal of the Evolution of Vice and Virtue. *Zygon*, **44**(4):932-950. <https://doi.org/10.1111/j.1467-9744.2009.01042.x>
- DENNETT, D.C. 1989. *The Intentional Stance*. Cambridge, MIT Press, 388 p.
- ELLWOOD, R.S.; ALLES, G.D. 2007. *The Encyclopedia of World Religions: Revised Edition*. New York, DWJ Books LLC, 514 p.
- EMMONS, N.A.; KELEMEN, D. 2014. The Development of Children's Prolife Reasoning: Evidence from Two Cultures. *Child Development*, **85**(4):1617-1633. <https://doi.org/10.1111/cdev.12220>
- EPLEY, N.; WAYTZ, A.; CACIOPPO, J.T. 2007. On Seeing Human: A Three-Factor Theory of Anthropomorphism. *Psychological Review*, **114**(4):864-886. <https://doi.org/10.1037/0033-295X.114.4.86>
- GERVAIS, W.M. 2013. Perceiving Minds and Gods: How Mind Perception Enables, Constrains, and Is Triggered by Belief in Gods. *Perspectives on Psychological Science*, **8**(4):380-394. <https://doi.org/10.1177/1745691613489836>
- GIBSON, J.J. 2015 [1975]. *The Ecological Approach to Visual Perception: Classic Edition*. New York, Psychology Press, 315 p.
- GOMES, A.; PARROTT, M.; SHEPHERD, J. 2016. More Dead Than Dead? Attributing Mentality to Vegetative State Patients. *Philosophical Psychology*, **29**(1):84-95. <https://doi.org/10.1080/09515089.2015.1048328>
- GRAY, K.; KNICKMAN, T.A.; WEGNER, D.M. 2011. More Dead Than Dead: Perceptions of Persons in the Persistent Vegetative State. *Cognition*, **121**(2):275-280. <https://doi.org/10.1016/j.cognition.2011.06.014>

- GREEN, A. 2015. The Mindreading Debate and the Cognitive Science of Religion. *Sophia*, **54**(1):61-75. <https://doi.org/10.1007/s11841-014-0450-0>
- GREENE, J. 2003. From Neural 'Is' to Moral 'Ought': What Are the Moral Implications of Neuroscientific Moral Psychology? *Nature Reviews Neuroscience*, **4**(10):846-850. <https://doi.org/10.1038/nrn1224>
- GRIFFIN, R.; BARON-COHEN, S. 2002. The Intentional Stance: Developmental and Neurocognitive Perspectives. In: A. BROOK; D. ROSS (eds.), *Daniel Dennett: Contemporary Philosophy in Focus*. Cambridge, UK, Cambridge University Press, p. 83-116).
- GUTHRIE, S. 1980. A Cognitive Theory of Religion. *Current Anthropology*, **21**(2):181-203. <https://doi.org/10.1086/202429>
- GUTHRIE, S. 1993. *Faces in the Clouds: A New Theory of Religion*. New York, Oxford University Press, 335 p.
- GUTHRIE, S. 2007. Opportunity, Challenge and a Definition of Religion. *Journal for the Study of Religion, Nature and Culture*, **1**(1):58-67. <https://doi.org/10.1558/jsrc.v1i1.58>
- HARRIS, P.L.; GIMÉNEZ, M. 2005. Children's Acceptance of Conflicting Testimony: The Case of Death. *Journal of Cognition and Culture*, **5**(1-2):143-164. <https://doi.org/10.1163/1568537054068606>
- HASLAM, N.; KASHIMA, Y.; LOUGHNAN, S.; SHI, J.; SUITNER, C. 2008. Subhuman, Inhuman, and Superhuman: Contrasting Humans with Nonhumans in Three Cultures. *Social Cognition*, **26**(2):248-258. <https://doi.org/10.1521/soco.2008.26.2.248>
- HEIPHETZ, L.; LANE, J.D.; WAYTZ, A.; YOUNG, L.L. 2016. How Children and Adults Represent God's Mind. *Cognitive Science*, **40**(1):121-144. <https://doi.org/10.1111/cogs.12232>
- HEIPHETZ, L.; LANE, J.D.; WAYTZ, A.; YOUNG, L.L. 2018. My Mind, Your Mind, and God's Mind: How Children and Adults Conceive of Different Agents' Moral Beliefs. *British Journal of Developmental Psychology*, **36**(3):467-481. <https://doi.org/10.1111/bjdp.12231>
- HINDE, R.A.; BARDEN, L.A. 1985. The Evolution of the Teddy Bear. *Animal Behaviour*, **33**(4):1371-1373. [https://doi.org/10.1016/S0003-3472\(85\)80205-0](https://doi.org/10.1016/S0003-3472(85)80205-0)
- HODGE, K.M. 2006. *What Myths Reveal About How Humans Think: A Cognitive Approach to Myth*. Arlington, USA. M.A. Thesis. University of Texas Arlington, 184 p.
- HODGE, K.M. 2008. Descartes' Mistake: How Afterlife Beliefs Challenge the Assumption that Humans Are Intuitive Cartesian Substance Dualists. *Journal of Cognition and Culture*, **8**(3-4):387-415. <https://doi.org/10.1163/156853708X358236>
- HODGE, K.M. 2011a. On Imagining the Afterlife. *Journal of Cognition and Culture*, **11**(3-4):367-389. <https://doi.org/10.1163/156853711X591305>
- HODGE, K.M. 2011b. Why Immortality Alone Will Not Get Me to the Afterlife. *Philosophical Psychology*, **24**(3):395-410. <https://doi.org/10.1080/09515089.2011.559620>
- HODGE, K.M. 2012. Context Sensitivity and the Folk Psychology of Souls: Why Bering et al. Got the Findings They Did. In: D. EVERS; M. FULLER; A. JACKELÉN; T. SMEDES (eds.), *Is Religion Natural?* New York, T and T Clark International, p. 49-63.
- HODGE, K.M. 2016. The Death We Fear Is Not Our Own: The Folk Psychology of Souls Revisited and Reframed. In: H. DE CRUZ; R. NICHOLS (eds.), *Advances in Religion, Cognitive Science, and Experimental Philosophy*. London, Bloomsbury Academic, p. 197-217.
- HODGE, K.M. 2018. Dead-Survivors, the Living Dead, and Concepts of Death. *Review of Philosophy and Psychology*, **9**(3):539-565. <https://doi.org/10.1007/s13164-017-0377-9>
- HODGE, K.M.; SOUSA, P. [in press]. Children's Attributions of Beliefs to Humans and God: Cross-Cultural Evidence. In: D.J. SLONE (ed.), *The Cognitive Science of Religion: A Methodological Introduction to Key Empirical Studies*. London, Bloomsbury Academic.
- HODGE, K.M.; SOUSA, P. 2018. Dualism, Disembodiment and the Divine: Supernatural Representations in CSR. In: A.K. PETERSEN; L. MARTIN; J.S. JENSEN; I. GILHUS; J. SØRENSEN (eds.), *A New Synthesis: Cognition, Evolution and History in the Study of Religion*. Leiden, Brill, p. 309-321. [https://doi.org/10.1163/9789004385375\\_021](https://doi.org/10.1163/9789004385375_021)
- HORST, S. 2016. Whose Intuitions? Which Dualism? In: R. TRIGG; J.L. BARRETT (eds.), *The Roots of Religion: Exploring the Cognitive Science of Religion*. New York, Routledge, p. 37 -54.
- HUANG, J.; CHENG, L.; ZHU, J. 2013. Intuitive Conception of Dead Persons' Mentality: A Cross-Cultural Replication and More. *International Journal for the Psychology of Religion*, **23**(1):29-41. <https://doi.org/10.1080/10508619.2013.735493>
- JOHNSON, D. 2016. *God Is Watching You: How the Fear of God Makes Us Human*. Oxford, Oxford University Press, 286 p.
- JONES, L. (ed.). 2005. *Encyclopedia of Religion*. 2<sup>nd</sup> ed., Detroit, Macmillan Reference USA.
- JORDAN, M. (ed.). 2004. *Dictionary of Gods and Goddesses*. New York, Facts on File.
- KNIGHT, N.; SOUSA, P.; BARRETT, J.L.; ATRAN, S. 2004. Children's Attributions of Beliefs to Humans and God: Cross-Cultural Evidence. *Cognitive Science*, **28**(1):117-126. <https://doi.org/10.1016/j.cogsci.2003.09.002>
- KNOBE, J. 2010. Person as Scientist, Person as Moralist. *Behavioral and Brain Sciences*, **33**:315-365. <https://doi.org/10.1017/S0140525X10000907>
- LAMBERT, A.J.; CHASTEEN, A.L. 1999. Social Cognition. In: W. BECHTEL; G. GRAHAM (eds.), *A Companion to Cognitive Science*. Malden, Blackwell Publishing, p. 306-313.
- LANE, J.D.; LIQI, Z.; EVANS, E.M.; WELLMAN, H.M. 2016. Developing Concepts of Mind, Body and Afterlife: Exploring the Roles of Narrative Context and Culture. *Journal of Cognition and Culture*, **16**(1-2):50-82. <https://doi.org/10.1163/15685373-12342168>
- LANE, J.D.; WELLMAN, H.M.; EVANS, E.M. 2010. Children's Understanding of Ordinary and Extraordinary Minds. *Child Development*, **81**(5):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**(3):1007-1021. <https://doi.org/10.1111/j.1467-8624.2012.01741.x>
- LEVINSON, D. (ed.). 1994. *Encyclopedia of World Cultures*. Boston, G.K. Hall.
- LEWIS, J.R. 1994. *Encyclopedia of Afterlife Beliefs and Phenomena*. Farmington Hills, Gale Research, 420 p.
- LINDEMAN, M.; PYYSIÄINEN, I.; SAARILUOMA, P. 2002. Representing God. *Papers on Social Representations*, **11**, 1.1-1.13. Available at: <http://psr.iscte-iul.pt/index.php/PSR/article/view/277/242> Accessed on: 04/18/2015.

- LURKER, M. (ed.). 2004. *The Routledge Dictionary of Gods and Goddesses, Devils and Demons*. New York, Routledge, 272 p. <https://doi.org/10.4324/9780203643518>
- MA-KELLAMS, C. 2015. When Perceiving the Supernatural Changes the Natural: Religion and Agency Detection. *Journal of Cognition and Culture*, **15**(3-4):337-343. <https://doi.org/10.1163/15685373-12342154>
- McGINN, C. 1995. Animal Minds, Animal Morality. *Social Research*, **62**(3):731-747. Available at: <http://www.jstor.org/stable/40971117>. Accessed on: November 29, 2018.
- MEDIN, D.L.; ORTONY, A. 1989. Psychological Essentialism. In: S. VOSNIADOU; A. ORTONY (eds.), *Similarity and Analogical Reasoning*. Cambridge, Cambridge University Press, p. 179-195. <https://doi.org/10.1017/CBO9780511529863.009>
- MICHALSKI, R.S. 1989. Two-Tiered Concept Meaning, Inferential Matching, and Conceptual Cohesiveness. In: S. VOSNIADOU; A. ORTONY (eds.), *Similarity and Analogical Reasoning*. Cambridge, UK, Cambridge University Press, p. 122-145. <https://doi.org/10.1017/CBO9780511529863.007>
- MITHEN, S.; BOYER, P. 1996. Anthropomorphism and the Evolution of Cognition. *The Journal of the Royal Anthropological Institute*, **2**(4):717-721.
- MORIGUCHI, Y.; TAKAHASHI, H.; NAKAMATA, T.; TODO, N. 2018. Mind Perception of God in Japanese Children. *International Journal of Psychology*. <https://doi.org/10.1002/ijop.12482>
- NIKKEL, D.H. 2015. The Dualistic, Discarnate Picture that Haunts the Cognitive Science of Religion. *Zygon*, **50**(3):621-646. <https://doi.org/10.1111/zygo.12194>
- NIKKEL, D.H. 2018. Curing Dualistic, Disembodied Patterns of Thinking in the Academy. *Tradition and Discovery: The Polanyi Society Periodical*, **44**(1):6-25. <https://doi.org/10.5840/traddisc20184415>
- NORENZAYAN, A. 2013. *Big Gods: How Religion Transformed Cooperation and Conflict*. Princeton, Princeton University Press, 264 p.
- NORENZAYAN, A. 2016. Theodiversity. *Annual Review of Psychology*, **67**(1):465-488. <https://doi.org/10.1146/annurev-psych-122414-033426>
- NYHOF, M.A.; JOHNSON, C.N. 2017. Is God Just a Big Person? Children's Conceptions of God across Cultures and Religious Traditions. *British Journal of Developmental Psychology*, **35**(1):60-75. <https://doi.org/10.1111/bjdp.12173>
- ORR, Y. 2015. Animal Magnetism: Perceiving Environmental Objects as Social Subjects among Balinese Looking at Roosters. *Visual Anthropology*, **28**(2):127-136. <https://doi.org/10.1080/08949468.2015.996498>
- PEREIRA, V.; FAÍSCA, L.; SÁ-SARAIVA, R. d. 2012. Immortality of the Soul as an Intuitive Idea: Towards a Psychological Explanation of the Origins of Afterlife Beliefs. *Journal of Cognition and Culture*, **12**(1-2):101-127. <https://doi.org/10.1163/156853712X633956>
- PIAGET, J. 1929. *The Child's Conception of the World*. Transl. by J. Tomlinson and A. Tomlinson. London, Routledge and Kegan Paul, 410 p.
- PURZYCKI, B.G. 2013. The Minds of Gods: A Comparative Study of Supernatural Agency. *Cognition*, **129**(1):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**(5):846-869. <https://doi.org/10.1111/j.1551-6709.2012.01242.x>
- PURZYCKI, B.G.; WILLARD, A.K. 2016. Mci Theory: A Critical Discussion. *Religion, Brain and Behavior*, **6**(3):207-248. <https://doi.org/10.1080/2153599X.2015.1024915>
- RICHERT, R.A.; SAIDE, A.R.; LESAGE, K.A.; SHAMAN, N.J. 2016a. The Role of Religious Context in Children's Differentiation between God's Mind and Human Minds. *British Journal of Developmental Psychology*. <https://doi.org/10.1111/bjdp.12160>
- RICHERT, R.A.; SHAMAN, N.J.; SAIDE, A.R.; LESAGE, K.A. 2016b. Folding Your Hands Helps God Hear You: Prayer and Anthropomorphism in Parents and Children. In: A. VILLAGE; R.W. HOOD (eds.), *Research in the Social Scientific Study of Religion*. Leiden, The Netherlands, Brill, p. 140-157.
- RICHERT, R.A.; SMITH, E.I. 2010. The Role of Religious Concepts in the Evolution of Human Cognition. In: U. FREY (ed.), *The Nature of God: Evolution and Religion*. Antwerp, Belgium, Tectum, p. 93-110.
- ROES, F.L.; RAYMOND, M. 2003. Belief in Moralizing Gods. *Evolution and Human Behavior*, **24**(2):126-135. [https://doi.org/10.1016/S1090-5138\(02\)00134-4](https://doi.org/10.1016/S1090-5138(02)00134-4)
- ROSSANO, M. 2007. Supernaturalizing Social Life. *Human Nature*, **18**(3):272-294. <https://doi.org/10.1007/s12110-007-9002-4>
- ROSSANO, M. 2010. *Supernatural Selection: How Religion Evolved*. Oxford, Oxford University Press, 294 p. <https://doi.org/10.1093/acprof:oso/9780195385816.001.0001>
- ROTTMAN, J.; KELEMEN, D. 2011. Is There Such a Thing as a Christian Child? Evidence of Religious Beliefs in Early Childhood. In: P. McNAMARA; W. WILDMAN (eds.), *Science and the World's Religions: Origins and Destinies*. Santa Barbara, CA, Praeger Press, p. 205-238.
- SAPONTZIS, S.F. 1980. Are Animals Moral Beings? *American Philosophical Quarterly*, **17**(1):45-52. Available at: <http://www.jstor.org/stable/20009783>. Accessed on: November 29, 2018.
- SEBESTÉNY, A.; EMMONS, N.A. 2017. Balinese Hindus' Afterlife Beliefs as Stable Constructs: An Effect of High Frequency Domestic Rituals. *Journal of Cognition and Culture*, **17**:1-26.
- SEVERSON, R.L.; LEMM, K.M. 2016. Kids See Human Too: Adapting an Individual Differences Measure of Anthropomorphism for a Child Sample. *Journal of Cognition and Development*, **17**(1):122-141. <https://doi.org/10.1080/15248372.2014.989445>
- SHAMAN, N.J.; SAIDE, A.R.; RICHERT, R.A. 2018. Dimensional Structure of and Variation in Anthropomorphic Concepts of God. *Frontiers in Psychology*, **9**:1425. <https://doi.org/10.3389/fpsyg.2018.01425>
- SHEPARD, R.N. 1984. Ecological Constraints on Internal Representation: Resonant Kinematics of Perceiving, Imagining, Thinking, and Dreaming. *Psychological Review*, **91**(4):417-447. <https://doi.org/10.1037/0033-295X.91.4.417>
- SHTULMAN, 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**(5):1123-1138. <https://doi.org/10.1037/0278-7393.34.5.1123>

- SHTULMAN, A.; LINDEMAN, M. 2016. Attributes of God: Conceptual Foundations of a Foundational Belief. *Cognitive Science*, **40**(3):635-670. <https://doi.org/10.1111/cogs.12253>
- SLONE, J. 2007. *Theological Incorrectness: Why Religious People Believe What They Shouldn't*. Oxford, Oxford University Press, 176 p.
- TAYLOR, R.P. 2000. *Death and the Afterlife: A Cultural Encyclopedia*. Santa Barbara, ABC-CLIO, 438 p.
- URQUIZA-HAAS, E.G.; KOTRSCHAL, K. 2015. The Mind Behind Anthropomorphic Thinking: Attribution of Mental States to Other Species. *Animal Behaviour*, **109**:167-176. <https://doi.org/10.1016/j.anbehav.2015.08.011>
- WATSON-JONES, R.E.; BUSCH, J.T.A.; HARRIS, P.L.; LEGARE, C.H. 2017. Does the Body Survive Death? Cultural Variation in Beliefs about Life Everlasting. *Cognitive Science*, **41**(S3):455-476. <https://doi.org/10.1111/cogs.12430>
- WAYTZ, A.; CACIOPPO, J.; EPLEY, N. 2014. Who Sees Human? The Stability and Importance of Individual Differences in Anthropomorphism. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, **5**(3):219-232. <https://doi.org/10.1177/1745691610369336>
- WAYTZ, A.; EPLEY, N.; CACIOPPO, J.T. 2010a. Social Cognition Unbound: Insights into Anthropomorphism and Dehumanization. *Current Directions in Psychological Science*, **19**(1):58-62. <https://doi.org/10.1177/0963721409359302>
- WAYTZ, A.; MOREWEDGE, C.K.; EPLEY, N.; MONTELEONE, G.; GAO, J.-H.; CACIOPPO, J.T. 2010b. Making Sense by Making Sentient: Effectance Motivation Increases Anthropomorphism. *Journal of Personality and Social Psychology*, **99**(3):410-435. <https://doi.org/10.1037/a0020240>
- WELLMAN, H.M. 2014. *Making Minds: How Theory of Mind Develops*. New York, Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199334919.001.0001>
- WESTH, P. 2013. Anthropomorphism in God Concepts: The Role of Narrative. In: A. GEERTZ (ed.), *Origins of Religion, Cognition and Culture*. London, Routledge, p. 396-413.
- WHITE, C.; KINSELLA, M.; BERING, J. 2017. How to Know You've Survived Death. *Method and Theory in the Study of Religion*, **30**(3):279-299. <https://doi.org/10.1163/15700682-12341431>

Submitted on September 18, 2018

Accepted on September 21, 2018