The minds of gods: A comparative study of supernatural agency

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ARTICLE INFO

Article history:
Received 11 October 2012
Revised 21 June 2013
Accepted 24 June 2013

Keywords:
Religion
Minds of gods
Supernatural Punishment Hypothesis
Omniscience
Cultural consensus analysis
Theological correctness

ABSTRACT

The present work is the first study to systematically compare the minds of gods by examining some of the intuitive processes that guide how people reason about them. By examining the Christian god and the spirit-masters of the Tyva Republic, it first confirms that the consensus view of the Christian god’s mind is one of omniscience with acute concern for interpersonal social behavior (i.e., moral behaviors) and that Tyvan spirit-masters are not as readily attributed with knowledge or concern of moral information. Then, it reports evidence of a moralization bias of gods’ minds; American Christians who believe that God is omniscient rate God as more knowledgeable of moral behaviors than nonmoral information. Additionally, Tyvans who do not readily report pro- or antisocial behavior among the things that spirit-masters care about will nevertheless rate spirit-masters’ knowledge and concern of moral information higher than nonmoral information. However, this knowledge is distributed spatially; the farther away from spirits’ place of governance a moral behavior takes place, the less they know and care about it. Finally, the wider the breadth of knowledge Tyvans attribute to spirit-masters, the more they attribute moral concern for behaviors that transpire beyond their jurisdiction. These results further demonstrate that there is a significant gulf between expressed beliefs and intuitive religious cognition and provides evidence for a moralization bias of gods’ minds.

1. Introduction

For a long time, researchers of religion have argued that religion functions to maintain and promote cooperation between individuals (Durkheim, 2001[1915]; Malinowski, 1932; Rappaport, 1979, 1999). Contemporary experimental evidence suggests that religious priming can boost cooperative behavior and can minimize defection on social rules (Bering, McLeod, & Shackelford, 2005; Johnson, 2005; Johnson & Bering, 2006; Piazza, Bering, & Ingram, 2011; Randolph-Seng & Nielsen, 2007; Shariff & Norenzayan, 2007). Behavioral and cross-cultural studies also suggest that participation in religious rituals reliably conveys commitment to the group and contributes to overcoming problems inherent to human cooperation (Soler, 2012; Sosis & Bressler, 2003; Sosis & Ruffle, 2003, 2004; Sosis, Kress, & Boster, 2007). Many have also observed that gods around the world are especially knowledgeable and concerned with human behavior (Boyer, 2001; Johnson, 2005; Pettazzoni, 1955), but the specific domains of concern people explicitly attribute to gods appear to vary from place to place. As far as we know, these domains are limited to interpersonal social behavior, ritual, environmental resource management, and etiquette (Purzycki, 2012; Purzycki & Sosis, 2011). However, while religion appears to positively mediate interpersonal social behavior and curb antisocial behavior, we currently have very little in the way of understanding the cognitive foundations for these effects. If religion heightens levels of prosociality, do gods without explicit concern for interpersonal social behaviors (e.g., theft, generosity, murder, honesty, etc.) still prime moral systems and domains?

The cognitive science of religion literature regularly claims that the ability to mentalize is the essence of religious cognition; our commitment to supernatural beings requires the ability to make sense of other minds (Atran,
2002, pp. 59–63; Barrett, 2004; Bering, 2011; Guthrie, 1980, 1995). However, remarkably little has been done to empirically investigate the cross-cultural similarities and variation in representations of gods’ minds and how this relates to religious prosociality. As such, many questions remain unanswered. For example, do people have a predisposition towards associating interpersonal social behaviors such as theft and generosity, deceit and honesty, cruelty and kindness with supernatural agents? If present, does this predisposition operate even in contexts where supernatural agents are not explicitly concerned about human morality? Do people around the world draw upon different cognitive systems to think about the knowledge and concerns of their gods? The present study initiates the formal examination of these questions by systematically investigating how people from two different cultures—American Christian students and Buddhist-animist Tyvans from southern Siberia—make sense of their gods’ minds.

The following sections review current thinking and evidence on how and why it is that humans commit to gods. Following this is a discussion of the important distinction between “theologically correct” beliefs and how intuitive cognitive processes often betray culturally specific postulates. I then review some of the theological discussions of the Abrahamic god’s mind followed by a brief description of religion in the Tyva Republic. Drawing from this framework, I present hypotheses and their tests regarding how people ought to reason about their supernatural agents and conclude by illustrating future directions in the study of gods’ minds.

1.1. Representing supernatural minds

Recently, the question of why humans are religious has become reinvigorated by the cognitive and evolutionary sciences of religion. While cognitive approaches attempt to unravel the proximate mechanisms at work in religious cognition, evolutionary approaches seek to determine whether or not religion promotes survival and reproduction.

Many argue that the essence of religious cognition is the representation of supernatural minds, an ability stemming from our normal, everyday theory of mind systems (see Baron-Cohen, 1995; Premack & Woodruff, 1978). In his foundational work, Guthrie (1980, 1995) argues that anthropomorphism—granting human-like characteristics to non-human entities—is a central feature of religion. Anthropomorphism includes human-like forms, and attributing comprehension of symbolic thought and human motivations to non-humans. Barrett (2004) and Keil (Barrett & Keil, 1996) suggest that humans are equipped with a “hyperactive agency detection device” (HADD) that rapidly attributes mental states to events and objects lacking agency. This contributes to our religious inclinations insofar as we frequently appeal to gods’ mental states to explain a host of phenomena. Recently, Norenzayan, Gervais, and Trzesniewski (2012) found that those who suffer from deficiencies in theory of mind are less likely to believe in God. While these works address the innate cognitive machinery behind mentalizing gods, other work focuses on the content (i.e., representational domains) of gods’ minds.

Boyer (2001, p. 144) observes that people are far more interested in the minds of their gods rather than other features and posits that people are more likely to endow supernatural agents with access to domains of “socially strategic information” (Boyer, 2000, 2002). He defines this as “the subset of all the information...that activates the mental systems that regulate social interaction” (2001, p. 152). Bering (2011) defines “strategic social information” as “any information that, once exposed, could influence one’s reproductive success” (p. 174). Having access to this reputational information is often held to be the primary distinction between gods and other counterintuitive agents (Atran, 2002; Barrett, 2008; Boyer, 2001, 2002); gods who care about such information are more salient to our minds than other agents without such abilities (e.g., cartoons, mythical creatures). These theorists often explain retention of and commitment to supernatural agent concepts by appealing to their cognitive salience, but very little work has been done to get a reliable account of the variation in attributed domains of concern to gods. However, one thread of research suggests that the links between supernatural agents, their minds, and socially strategic knowledge function to mediate social behavior and thus contribute to the evolution of cooperation.

1.2. Gods’ minds

1.2.1. Supernatural punishment and cooperation

Some evolutionary theories culminate into what is known as the Supernatural Punishment Hypothesis (Schloss & Murray, 2011). One strand of this hypothesis (Bering & Johnson, 2005; Johnson, 2005) suggests that a psychological commitment to punishing deities is a part of our evolved repertoire of cognitive systems. Another (Norenzayan & Shariff, 2008; Shariff & Norenzayan, 2007) posits that because of the prosocial effects of punishing supernatural agents, such concepts are more prevalent in large populations. Together, this research shows that supernatural agents often function to inhibit self-interested behavior or free-riding, and this strengthens cooperation which significantly contributes to individual well-being.

People are more likely to engage in prosocial behavior or suppress antisocial behavior when primed with supernatural agent concepts (Bering & Johnson, 2005; Bering et al., 2005; Johnson, 2005; Johnson & Bering, 2006; Piazza, Bering, & Ingram, 2011; Randolph-Seng & Nielsen, 2007; Rossano, 2007; Shariff & Norenzayan, 2007). We also see similar effects with the priming of secular justice concepts (Shariff & Norenzayan, 2007) as well as mere indicators of agency such as a picture of two eyes (Haley & Fessler, 2005; cf. Nettle et al., 2013). Importantly, explicit models of whether God is primarily forgiving or punishing affect behavior in economic games (Shariff & Norenzayan, 2011). While the vast majority of these studies have been conducted among Westerners in the Abrahamic tradition, Xygalatas (2013) found that among Hindu Mauritians, religious location primes also boost cooperation. Together, these works suggest that god and other religious concepts...
engage theory of mind and regulatory systems that significantly alter social behavior. If this is the case, there should be a cognitive bias towards moralizing the content of our gods’ minds. However, not all gods care about human virtue or interpersonal social behaviors like cooperation, generosity, cheating, and so forth. In other words, not all gods care about “morality”.

1.2.2. Moral models, systems, and interpersonal social behavior

Of course, what is explicitly “moral” for one population is not necessarily moral for another (Shweder, Mahapatra, & Miller, 1987; Shweder, Much, Mahapatra, & Park, 1997), just as what might be “socially strategic” might vary cross-culturally. Researchers continue to struggle with how to properly define morality (see Haidt, 2008; Rossano, 2008 for reviews). Some consider morality to be prescriptive and generalizable models of welfare and rights (Turiel, 1983, p. 3; Smetana, 2006, p. 121). Rossano (2008), for instance, defines morality as the “cultivation and application of virtue”, thus emphasizing the connection between models of what it means to be virtuous and how they are enacted. Haidt (2008), however, defines moral systems as “interlocking sets of values, practices, institutions, and evolved psychological mechanisms that work together to suppress or regulate selfishness and make social life possible” (70).

As mentioned earlier, supernatural agents seem to be concerned with: (a) interpersonal social behavior (i.e., how we behave toward one another with a cost or benefit to others), (b) resource management (i.e., how we behave toward resources that others might be able to use), (c) non-moral etiquette (i.e., how we behave in ways that identify us as a socially appropriate person), and (d) ritual behavior (i.e., how we behave towards the gods). These can all be construed as moral or “socially strategic”, depending on one’s semantic flexibility.¹

The present work uses “moral” merely as shorthand for a conceptual domain of interpersonal social behavior with an immediate cost or benefit to other people (e.g., theft, murder, harm, generosity, kindness, assistance, etc.) and “moralistic deities” as gods who care about such behaviors. It does not rely on any particular definition of morality, however, and I use it in this fashion to avoid cumbersome redundancies. Rather, the present concerns focus on whether or not there are cognitive biases towards endowing supernatural agents with such domains of socially strategic knowledge even when such knowledge is not among their explicitly held concerns. If there is such a bias, it would suggest that gods play a role in mediating interpersonal social behavior regardless of explicit cultural beliefs.

1.2.3. Gods and moral concern

Anthropologists and other social scientists have demonstrated that people in highly specialized state-level societies primarily believe in explicitly moralistic high gods (Johnson, 2005; Lahti, 2009; Roes & Raymond, 2003; Sanderson, 2008; Stark, 2001; Swanson, 1960; Wallace, 1966). Because of the heightened anonymity and unaccountability fostered by population density, the argument goes, moralistic deities function to curb antisocial behavior and promote cooperative behavior. These gods tend to know everything in order to see antisocial behaviors otherwise not witnessed by other humans. As such, they function as powerful appeals to influence others’ behavior. However, while many traditional societies appear to have moralistic (Boehm, 2008) and omniscient deities (Petrazzoni, 1955) as well, just how widespread such beliefs are/were within such societies remains unknown.

We do know, however, that not all supernatural agents are explicitly concerned with interpersonal social behavior; in many traditions, gods appear to be primarily concerned with ritual behavior, resource management, and/or nonmoral taboos and etiquette (see Atran et al., 2002; Lansing, 2007; Lansing & Kremer, 1993; see Purzycki, 2011, 2012, pp. 232–252; Purzycki & Sosis, 2011 for further discussion) or appear to be altogether unconcerned with humans. Yet, Boehm (2008) analyzed 18 ethnographic accounts of foraging societies and found that while there is significant variation in the particular behaviors supernatural agents sanction, each of these societies have concepts of the supernatural punishment of immoral behavior. There are many other ethnographic accounts of small-scale societies with moralistic supernatural agents. For example, according to some accounts, the ancestor-spirits of the Ju/hoansi get angry and kill people when they are “quarrelsome and unpleasant to other people” (Lee, 2003, p. 129; cf. Marshall, 1962). The Nuer’s god “sees and hears all that happens and he can be angry and can love” (Evans-Pritchard, 1956, p. 7). So, if we assume that such accounts are accurate and representative of these populations, even in small-scale societies, moral concern and/or omniscience can be central features of gods’ minds.

How intuitive, then, are the omniscience and moral concern we attribute to supernatural agents? It appears a priori that most people around the world assume and/or believe that gods know more than humans, even if they are not thought of as being absolutely all-knowing. And while it might be effortless for Westerners to claim that all gods are “moralistic”, people explicitly endow their gods with different concerns. So, in order to examine the question of the intuitiveness of omniscience and moralism, we must turn to the distinction between culturally “correct” beliefs and intuitive cognitive systems. It may be the case that a moralization bias of gods’ minds exists in all populations, but reflective cultural models may override or harness this bias in particular contexts. Much like when we say that the sun rises even though we know it does not, culturally correct models of the world’s entities are often

¹ Even though “culture” may play an important role in the formation of moral models and reasoning (Sachdeva, Singh, & Medin, 2011), presumably all populations have various conceptual domains approximating to beneficial and harmful interpersonal social behaviors, regardless of whether or not they are appealed to in the domain of religion (Brown, 1991, p. 139). Generalizable norms, interpersonal moral behaviors, information about rituals, nonmoral taboos, how to behave in specific contexts, and other forms of etiquette may exist everywhere even though their content may vary superficially across populations. These domains can overlap and/or nest within one another. So, in one context, representational models of what it means to be a good or bad person may entirely overlap with models of what a god cares about (e.g., in the Abrahamic tradition), whereas in other contexts, they may not (e.g., in the Tyvan case).
inconsistent with our intuitions about those entities’ properties (Barrett, 1999, p. 325).

1.3. Theological and cultural “correctness”

Sperber (1997) distinguishes between what he calls “reflective” and “nonreflective” beliefs (see too McCauley, 2011; Slone, 2004). Reflective beliefs are those generated by way of conscious weight assignment and distribution, debate, and deliberation (Barrett, 2004, p. 7). On the other hand, we generate nonreflective or intuitive beliefs with little to no conscious manipulation: “All beliefs that are the output of perceptual processes are intuitive in a standard psychological sense, and so are all beliefs that are the output of spontaneous and unconscious inferential processes taking intuitive beliefs as premises” (Sperber, 1997, p. 78). Barrett (2004) discusses how this distinction characterizes the logical and factual inconsistencies people frequently entertain about their deities. In other words, native intuitions often get in the way of what we are “supposed” to say.

Regarding reflective beliefs, Barrett (1998) and Keil (Barrett & Keil, 1996) reason that “If subjects were asked directly what they believed about God, responses would tend to fit into an abstract theology” (223). In other words, upon reflection, people will explicitly state semantically stored religious postulates that are consistent with theological teachings. However, people often recall narratives that are inconsistent with explicit, theoretically correct beliefs. For example, while a narrative in one experiment makes no indication that there is a perceptual conflict for God when hearing birds singing and the roar of a jet engine, one participant recalls the story as: “God was listening to two birds singing in a tall tree next to an airport. When a large jet landed, God listened to it because he could no longer hear the birds. Then he listened to the birds again” (Barrett & Keil, 1996, p. 239). Even though participants say that God perceives all, they nevertheless violate this when relying on intuitive processes about normal humans’ perceptual abilities. Likewise, while some say that “God is everywhere”, people will also readily say that “God came down from heaven” thereby limiting his form to the physical by virtue of cognitive systems devoted to folk-physics. Such conceptions are, therefore, “theologically incorrect” or inconsistent insofar as they tap into “online”, intuitive faculties designed for rapid, everyday computations. These computations produce outputs with content that is inconsistent with more abstract beliefs.²

Does this distinction relate to how we make sense of our gods’ minds? The idea that a god knows anything is indicative of a nonreflective, intuitive process; we intuitively assume gods have minds by virtue of evolved theory of mind systems. However, by comparison, the idea that “God knows everything” is a reflective, theoretically correct religious belief about the Abrahamic god. One can contemplate its implications, bring it forth to consciousness when asked, critically examine and question its veracity, and so forth. However, theological correctness is a matter of how people’s conscious, reflective beliefs correspond to the authoritative and/or shared models held by a particular tradition (Barrett, 1999); active computational processes produce different results from the stored doctrinal ideas we retain. If a tradition does not have a written source for their “abstract theology”, laypeople often appeal to the authority of religious leaders and popular cultural models of tradition. Theological incorrectness, then, is a matter of how cognitive biases systematically betray the content of cultural models. In the case of gods’ minds, one such bias may be knowledge of and concern for socially strategic behavior.

1.4. The Abrahamic god’s mind

People often say that the Abrahamic god knows everything. There are numerous references in the Bible (e.g., Matthew 10:30–31; Luke 12:4–7; Psalms 147:5) and the Quran (Surat Al-An’âm 6:59; Al-Nur 24:35) to God’s omniscience. There are also many classical discussions about gods’ knowledge of everything. For example, Homer’s Odyssey (7th century BCE) has many tales of gods hearing the prayers of Odysseus. Much later, Saint Augustine (Book 5 Section 9) critically examined Cicero’s position, arguing that “to confess that God exists, and at the same time to deny that He has foreknowledge of future things, is the most manifest folly” (Dods, 1888, p. 190). Also, the logical consistencies of God’s omniscience and humans’ free-will have also been a topic of serious debate among theologians and philosophers (Abbruzzese, 1997; Grim, 1983; Hughes, 1995, pp. 64–107; Kapitan, 1991; Kretzmann, 1966).

Moreover, within the Abrahamic holy books, there are numerous references to God’s punitive stance with promises of both reward and punishment (Hebrews 12:6; 1 John 5:16–17; Surat Al-Ma‘idah 5:38; Surat An-Nisa‘ 4:40; Thessalonians 1:5–9; Psalm 73). Again, this stance is not limited to the deities of the world religions (Pettazzoni, 1955) and its ubiquity suggests something fundamental about the way the religious mind works; supernatural agent concepts may engage evolved social monitoring modules (see Cosmides & Tooby, 1989, 1992; Purzycki et al., 2012; Sugiyama, Tooby, & Cosmides, 2002) and/or Haidt’s (2008) aforementioned

² Biases resulting in theological inconsistency quite likely come from different cognitive resources. While we may have cognitive modules that rapidly compute specific domains of information (see Anderson, 2007; Fodor, 1983), we also have clusters of informationstored as cultural or computational “schemas” (see D’Andrade, 1995, pp. 122–149; Strauss & Quinn, 1997). In the case of the former, as already discussed, we may think of God has having a physical body with perceptual limitations by virtue of our default inferences about agents. In the case of the latter, we might have a bias towards thinking of the Abrahamic god as having a beard, for instance, but this is likely because of the regularity of our exposure to such images. Individuals might think this, but do not believe in it and understand that they might not be supposed to believe in it. Such an inconsistency stems from our schematic prototypes of God. Readers may refer to Purzycki (2012, pp. 40–87) for some of my thoughts on the relationship between intuitive or modular inferences and explicit “cultural” assumptions. For the present work, I assume “culture” is, at the very least, explicit schematic knowledge whereas “intuitive” refers to deeper faculties, but the results and any interpretations are not affected by such assumptions. As such, an important unanswered but immediately relevant question to the present work is if supernatural agents trigger evolved moral systems, merely tap into conceptual schematic domains of morality, a combination of both, or neither (and perhaps these are all different ways of saying the same thing). I discuss this briefly in Section 4.
“moral systems” precisely because religion evolved to overcome challenges to human cooperation.

Purzycki et al. (2012) tested this prediction in a response-time task. We found that Christians who believe that God knows everything answered questions about God’s knowledge of negative moral behavior (e.g., Does God know that John cheats on his taxes?) significantly quicker than positive moral behaviors. Moreover, positive moral behaviors (e.g., Does God know that Ann gives to the homeless?) were answered significantly quicker than nonmoral questions (e.g., Does God know that Richard’s cat is hungry?). We found identical results for a trial asking the same questions about a fictitious, omniscient government, but there were no such differences for a trial with an omniscient, but non-interfering alien species. This suggests that our results are not solely due to the presence of an omniscient agent or the salience of interpersonal moral behavior. Instead, the accessibility of moral domains is likely to be due to the presence of supernatural agents whose minds are acutely concerned with prosocial and punitive behaviors.

One way to address this would be to test whether or not a similar propensity to intuitively attribute supernatural agents’ knowledge is present in a context where moral information is not salient among the concerns attributed to spirits. If a population’s gods explicitly care about things other than wickedness and kindness, but members of that society exhibit systematic inclinations to moralize their gods’ minds, then this would support the prediction that humans intuitively attribute supernatural agents with socially strategic information even if that information is not in the domain that is not the culturally correct domain of gods’ attributed concerns. If this were the case, it would suggest that supernatural agent concepts—regardless of their explicit concerns—correspond to underlying social monitoring systems. The present work tests this hypothesis in the Tyva Republic.

1.5. The Tyva Republic

The Tyva Republic (also known as “Tuva”) lies just north of western Mongolia in southern Siberia. About half of Tyva’s population (ca. 243,000) lives in rural villages and/or engage in transhumant pastoralism of various livestock. In the northeast, people herd reindeer whereas those living in the forested mountains and steppe regions primarily herd sheep, goats, and cattle.

Religion in Tyva is a complex, syncretic system that incorporates elements of animism, totemism, shamanism, and Buddhism. There is considerable regional variation in belief and practice as these traditions are rooted in place, landscape, and local ecology. One of the older threads within this rich tapestry is that of the local totemic spirit-master or cher eezi (lit. “owner” or “master” of the place, pl. cher eeler3). Cher eezi are the supernatural lords of resources (e.g., lakes, rivers, trees, etc.) and regions (e.g., kin-based territories, regions that are off-limits to human exploitation, and political districts) (Purzycki, 2010, 2011, in press).

As commonly found throughout Inner Asia, due to the Manichean-influenced Uighurs, the Tyvan shamanic worldview is a tripartite model (Upper, Middle, and Lower Worlds; see Eliade, 1964; Khomushku, 2008; Purzycki, 2012, pp. 214–230). Some supernatural agents in this region’s traditional pantheon appear to be moralistic, but reliable data on this is lacking. For example, the lord of the Lower World, Erlik-Khan, has been reported as moralistic and punitive (Khomushku, 2008; Van Deusen, 2004). However, there are many other cases where he is explicitly reported as neither (Eliade, 1964, p. 173; Harvilahti, 2000; Heissig, 1980, p. 54), or even benevolent and helpful (Chadwick, 1936; Halemba, 2006, p. 46; Pegg, 2001, p. 102).

Spirit-masters are of our world; the Middle world of the shamanic tradition. Cher eezi come in both anthropomorphic and zoomorphic forms and these forms correspond to resource type; anthropomorphic spirits are lords of larger regions whereas zoomorphic spirits govern particular discrete resources (Purzycki, in press). Tyvans regularly make offerings to spirit-masters at designated ritual cairns (ovaa) and at the resource over which they lord. Cairns are typically found on territorial borders and have a close association with place among Inner Asians (Humphrey & Onon, 1996; Kristensen, 2004; Vreeland, 1953). Purzycki and Arakchaa (2013) found that participation in cairn rituals conveys trustworthiness to other Tyvans and this effect is likely to be found elsewhere with this tradition.

In general, however, spirit-masters are not acutely concerned with interpersonal moral behavior or human virtues like trustworthiness; they are pleased by rituals and angered primarily by people ruining, soiling, or over-exploiting their resources. Importantly, there is very little overlap between Tyvans’ explicit, freelisted models of good and bad people and what angers or pleases cher eezi; Tyvans rarely list common things in these domains (Purzycki, 2011, 2012, pp. 232–252). In fact, in ethnographic interviews, Tyvans often explicitly deny that spirit-masters have concern for interpersonal social behavior (Purzycki, 2010).4 Moreover, it should be noted that Tyvans seldom consider cher eezi as an actively punishing agent; while bad things might happen if one fails to stop and perform rituals at designated cairns, one’s luck is negatively affected rather than the spirit angrily imposing its wrath upon non-participants (Purzycki, 2010, in press). In other words, unlike the Abrahamic god, they are not widely held as judges or punitive agents. As such, this context represents an ideal place to test predictions about latent cognitive processes responsible for moral reasoning and their association with gods’ minds. If such a bias is present, it would suggest that religion need not be explicitly about prosociality or antisocial behavior to be an effective means of mediating interpersonal social behavior.

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3 For the sake of clarity, I use cher eezi as a group noun.

4 This does not mean that Tyvans would say “no” if they were asked if a person who participates in rituals is a “better person” than one who does not or that they would deny that someone who pollutes a river is “bad”. The fluidity of “moral” and “socially strategic” can make just about anything a “moral” issue and it is obvious that there are moral dimensions (in Haidt and Rossano’s senses) to behavioral prescriptions. These are questions about the degree to which conceptual domains emically share content.
1.6. Predictions

1.6.1. Consensus models

As discussed above, our intuitive cognitive processes often interfere and run counter to explicit, reflective, and theologically correct beliefs. In order to generate what would approximate to the culturally or theologically correct models of gods’ minds, I use cultural consensus analysis (CCA; Batchelder & Romney, 1988; Borgatti & Halgin, 2011; Romney, Weller, & Batchelder, 1986; Weller, 2007) to find where agreement lies within each of the two samples. CCA finds pools of agreement within samples and identifies individual deviations from these pools. So, a small subsample of people might have more agreement in a particular domain (i.e., higher consensus). Additionally, CCA generates the “correct” responses to questions based on these pools of agreement. As such, it has been invaluable for field researchers (e.g., Boster & Johnson, 1989; Caulkins, 2004; de Munck, Dudley, & Cardinale, 2002; Miller, Kaneko, Bartram, Marks, & Brewer, 2004).

As the “theologically correct” characterization of God’s mind is omniscient and moralistic, a consensus analysis should demonstrate that while God knows everything, he only cares about morality. And, there should be little variation in the responses and therefore a high degree of consensus. However, the same questions posed to Tyvans about spirit-masters should yield very little agreement as morality is not among their readily-expressed concerns.

1.6.2. Moralization bias

If moralizing gods’ minds is intuitive, people should endow gods with more knowledge and concern of moral information than nonmoral information. In the case of the Abrahamic god, responses should be consistent with theologically correct models of God’s mind if there is no such bias. Alternatively, if there is a bias, then there should be significantly more affirmative responses to God’s knowledge of moral information than to nonmoral information. In the case of the Tyva Republic, where local spirit-masters are not as concerned about interpersonal morality, a moralizing bias exists, Tyvans should say that spirit-masters know moral behavior better than they know non-moral information. Alternatively, as moral information is not among the primary concerns of spirit-masters, there should be no differences between knowledge and concern of moral and nonmoral information ascribed to these spirits.

1.6.3. Omnisience, space, and moral concern

As local spirits associated with place, cher eezi’s knowledge base is likely to be grounded in its territory or resource of mastery. If this is the case, Tyvans should use proximity of information to spirit-masters’ location to mediate what information spirits know. Moreover, wider breadth of knowledge explicitly attributed to spirits should predict higher concern for morality if there is indeed a positive relationship between omniscience and concern for morality.

2. Culturally correct models of gods’ minds

2.1. The Abrahamic god’s mind

The theologically correct version of the Abrahamic god’s knowledge consists of everything whereas his concerns lean toward moral behavior. Cultural consensus models should indicate that God knows all manner of things—moral and nonmoral alike—whereas his concerns should be limited to interpersonal social behaviors.

2.1.1. Methods

Participants were given a survey (Appendix A) that consisted of a number of components in the following order: (a) basic demographic questions, (b) questions from a modified religiosity scale (Nicholas, 2004; Nicholas & Durrheim, 1995; Rohrbaugh & Jessor, 1975), (c) one long-response question asking participants to describe what God is in a few statements, (d) one free-list question asking participants to list up to 10 things about what God is, (e) a 50-question survey about God’s knowledge and 50 sub-questions about whether or not God cared about such information, and (f) another long-response question requesting that participants summarize what they believe God knows and cares about.

The 50-question survey’s instructions read: “Please answer the following questions to the best of your ability. If you are an atheist, please answer how you think people who believe in God would answer”. The randomized questions were designed to account for a number of domains drawn from elsewhere (Purzycki et al., 2012). Ten questions were designed to be strange and illogical (e.g., Does God know how tall he is?; Does God know to create a round circle?) in order to distract participants from any streamlined responses. These responses were therefore not included in the following analyses.

Twenty questions contained hypothetical moral content. Half of these questions consisted of behaviors that take place on the University of Connecticut campus and the other half take place in various places around the world. Of these moral items, 5 were good behaviors (e.g., Does God know if I was honest to my friends in St. Petersburg?; …if I were generous to someone here at UConn?) and 5 were bad (e.g., …if I quarreled with someone when I was in Brazil?; …if I hurt another person here at UConn?). Twenty questions were about mundane behaviors of no obvious consequence. Half were conceivably knowable in my presence (e.g., …know that my hair is brown?; …know what color my shirt is?) whereas the other half consists of properties knowable beyond me (e.g., …what is growing in my yard at home?; …what is under my bed?). Participants’ answers were on a scale of 2 to 2: “Yes” (2), “Probably” (1), “I don’t know” (0), “I doubt it” (1), and “No” (2). Again, each item was accompanied with a sub-question of whether or not God cares about such information.

2.1.2. Participants

Participants were recruited from an introductory anthropology course at the University of Connecticut and given course credit for participation. In order to isolate
believers in an omniscient god, only those participants who answered (a) that they believed that God is all-knowing and all-powerful and (b) that they are sure that God really exists and that He is active in their lives in preliminary questions were used in this analysis (N = 88; 41 women, one did not report sex; age M = 19.45; SD = 0.96; four did not report age). Sixty reported that they were Catholic and 14 reported that they were Protestant. Among the fill-in responses for those who circled “Other”, 9 reported that they were Christian, two reported that they were Lutheran, one reported Greek Orthodox affiliation, one reported being a “born again Christian”, and one reported being a “non-denominational Christian”. While one did not answer the question, all others reported being raised in Christian households. Four items from the religiosity scale had high intercorrelations with each other and the scores from the first Varimax rotated factor were used as an index of religiosity (eigenvalue = 2.86; 71.53% of the variance was explained; ɣ = 0.86).

2.2. Tyvan cher eezi’s minds

Using consensus analysis, we can determine the culturally correct responses to similar questions posed to Tyvans about cher eezi. As such questions are inconsistent with reflective beliefs, there should be considerable variation in Tyvans’ responses.

2.2.1. Participants

Participants (N = 88; 52 women; age M = 38.79, SD = 13.41; three did not report age) were interviewed in the capital city of Kyzyl between the months of March and August of 2010. The reported religious affiliations were: 56 Buddhist, 2 Shamanist, 26 Buddhist and Shamanist, two Christians, one answered “Other” with no elaboration, and one did not answer the question. Only ethnic Tyvans who could speak and read Tyvan well were interviewed. All participants were non-specialists (i.e., not shamans or lamas). Survey questions were translated into Tyvan, back-translated to English, and edited for consistency. With the help of assistants, all data were collected using written surveys administered on the streets, and in various schools, clinics, and other institutions throughout Kyzyl. Surveys took around 20–30 min to complete.

2.2.2. Methods

Surveys consisted of a number of tasks. One was a free-list task designed to elicit (a) qualities of a good Tyvan person, (b) qualities of a bad Tyvan person, (c) what please and (d) anger spirit-masters (Purzycki, 2011, 2012, n.d.). These data were compiled and analyzed in order to determine if there was significant overlap between models of good/bad Tyvan people and if these corresponded to models of spirit-masters’ concerns (Purzycki, 2012, pp. 232–252). Another component of the surveys was designed to elicit attributed breadth of knowledge to spirit-masters (see below).

In order to test and potentially control for effects of master type (human vs. animal) on attributions of omniscience and moralization, there were three variants of the survey (Appendix B): the introduction of one variant

<table>
<thead>
<tr>
<th>Concern</th>
<th>Discrete</th>
<th>Interval</th>
<th>Knowledge</th>
<th>Discrete</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of negative competencies</td>
<td>13</td>
<td>1</td>
<td>13</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Largest eigenvalue</td>
<td>29.64</td>
<td>58.34</td>
<td>52.69</td>
<td>24.41</td>
<td></td>
</tr>
<tr>
<td>2nd Largest eigenvalue</td>
<td>12.01</td>
<td>3.15</td>
<td>11.04</td>
<td>3.60</td>
<td></td>
</tr>
<tr>
<td>Ratio of largest to next</td>
<td>2.47*</td>
<td>18.53</td>
<td>4.77</td>
<td>6.78</td>
<td></td>
</tr>
</tbody>
</table>

* Violates assumption of 3-to-1 ratio required to determine the presence of a single culture.
These examples were taken from previous interviews (Purzycki, 2010). These interview samples (n = 37) read as follows: "The cher eezi of Bayan-Kol is a beautiful woman on a horse. Imagine that we are at her oova. Please answer the following questions as though we were there. Please circle your answers below". The second treatment's introduction was similar, but used a large bull spirit-master and Ubsa-Khol Lake (n = 23). The third variant's (n = 28) introduction used Adargan Arzhaan (in the Övür district) that has a small marmot as its master. These examples were taken from previous interviews (Purzycki, 2010).6

The survey treatments consisted of 39 questions: 10 moral items done in proximity to the oova (e.g., Does the cher eezi of this place know if I stole from another person here?), 10 moral items conducted at a significant distance from the oova (e.g., ...if I lied to someone when I am at home in America?), 10 non-moral items knowable at a large distance from the oova (e.g., ...,that my eyes are blue?), 9 non-moral items only knowable at a distance from the oova (e.g., ...,that the car parked at my house is orange?). Of the moral items, half were positive and half were negative social behaviors. Participants' answers were on a scale of 2 to −2: "Of course" (2), "Probably" (1), "I don't know" (0), "I doubt it" (−1), and "No" (−2). As was the case for the UConn sample, each item was accompanied with a sub-question of whether or not spirits cared about such information. These items were answered after the free-lists (Purzycki, 2011, 2012, pp. 232–252, n.d.), which were not revisable upon completion.

### 2.2.3. Results

Consensus analyses demonstrate that there is a considerable amount of variation in responses with the Tyvan sample (Tables C4–C8). The interval cultural consensus models of spirit-masters' knowledge and concern indicate a single culture with only six and eleven divergent individuals respectively. The discrete multiple-choice models, however, indicate a strong lack of fit (Table 2).

The discrete consensus models of spirit-masters' concerns show that the culturally correct response as consistently "I don't know", but 50 diverged from this pool. The interval model shows higher positive responses for spirit-masters' concern of local moral behaviors than distant moral behaviors with consistently lower scores for all non-moral items (Table C4).

The knowledge items show a similar pattern with 36 individuals diverging from the consensus model. The discrete model suggests that spirit-masters know all of the moral items and none of the nonmoral items (Table C5) whereas the interval model suggests that they probably know the local moral items, while distant moral behaviors range from "I don't know" to "Probably not". However, owing to the considerable variation in responses, there is an extreme lack of fit. As such, by eliminating the divergent individuals, we can examine the subgroups with different response patterns.

Table 3 details the consensus analyses for the primary cultures’ responses for concern and knowledge items. For the concern items, the remaining 38 were notably consistent in their responses (no one correlated negatively with the model). Discrete responses were consistently "I don't know" while the responses in the model for interval data vary (Table C6).

The primary pattern of agreement for the knowledge items (Table C7) also show a strong lack of fit for the discrete model, but only two individuals diverged from the model. According to the discrete responses, spirit-masters only know the moral items that take place at the spirits' place of mastery, only some of the moral items that take place elsewhere, and none of the nonmoral items (see Section 3.2.4).

Assessing the responses from 50 individuals who diverged from the primary model of the concern items, we once again find a strong lack of fit in the discrete model with 23 individuals diverging from the consensus (Table 4). This secondary group shows that spirit-masters care only about moral behaviors occurring at their place of mastery but do not care about moral behaviors taking place elsewhere or any of the nonmoral information (Table C8).

In summary, there was a high degree of consensus among Christian students at the University of Connecticut. Consensus models for God are theologically consistent insofar as God knows everything, and cares only about the moral information. By contrast, Tyvans show considerably more variation in their responses. This further suggests that these questions are indeed inconsistent with any widespread understanding of spirit-masters’ minds. I now turn to a direct cross-cultural comparison that further emphasizes the relative lack of concern and knowledge for moral information attributed to spirit-masters.

### 3. Cross-cultural comparison

#### 3.1. Knowledge and concerns

If Tyvans popularly hold that spirit-masters know and care about morality, then there should be no significant differences between Tyvan and American ratings.

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6 The data reported here include data reported elsewhere (Purzycki, 2011) and with the addition of the second treatment.
However, there are significant differences between these populations in their mean attributions of knowledge ($V = 0.62$, $F(13,162) = 20.58$, $p < 0.001$) and concern ($V = 0.63$, $F(13,161) = 21.06$, $p < 0.001$) to their spirits (Table 5, Figs. 1–3). The Christian god had significantly higher ($p < 0.001$) ratings than cher eezi for all variable categories other than concern for both proximate and distant nonmoral information (Table 6). In other words, for these items, the only thing that God and spirit-masters share is their lack of concern for nonmoral information.

### 3.2. Biases toward moralizing gods’ minds

#### 3.2.1. God’s mind

These participants claimed that God knows everything and is all-powerful. If they maintain their explicit convictions of God’s omniscience to answer questions, only one factor should load in a factor analysis; reflective, theologically correct thinking should yield one factor—the “God’s knowledge” factor. However, as found in previous experimental research (Purzycki et al., 2012), if moral domains are more accessible when thinking about God’s attributed knowledge, then the analysis should detect this by virtue of degree of conviction. Participants’ mean scores of each category were used for analyses.

### Table 3
Fits to interval and multiple choice consensus models for primary cultures’ concern and knowledge attributions.

<table>
<thead>
<tr>
<th>Concern ($n = 38$)</th>
<th>Knowledge ($n = 52$)</th>
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<td>Interval</td>
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<tr>
<td>No. of negative competencies</td>
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</tr>
<tr>
<td>Largest eigenvalue</td>
<td>17.06</td>
</tr>
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<td>2nd Largest eigenvalue</td>
<td>3.91</td>
</tr>
<tr>
<td>Ratio of largest to next</td>
<td>4.36</td>
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</table>

* Violates assumption of 3-to-1 ratio required to determine the presence of a single culture. See Tables C6–C7 for answer keys.

### Table 4
Fits to interval and multiple choice consensus models for secondary culture’s concern attributions.

<table>
<thead>
<tr>
<th>No. of negative competencies</th>
<th>Discrete</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>6</td>
<td></td>
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</tbody>
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* Violates assumption of 3-to-1 ratio required to determine the presence of a single culture. See Table C8 for answer key.

### Table 5
Basic statistics of question type ratings.

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<tr>
<th>God</th>
<th>Cher Eezi</th>
<th>Total</th>
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<tbody>
<tr>
<td>M</td>
<td>SD</td>
<td>Mdn</td>
</tr>
<tr>
<td>Knowledge items</td>
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<td></td>
</tr>
<tr>
<td>Moral Here Bad</td>
<td>1.81</td>
<td>0.38</td>
</tr>
<tr>
<td>Moral Here Good</td>
<td>1.79</td>
<td>0.41</td>
</tr>
<tr>
<td>Moral Elsewhere Bad</td>
<td>1.80</td>
<td>0.39</td>
</tr>
<tr>
<td>Moral Elsewhere Good</td>
<td>1.77</td>
<td>0.43</td>
</tr>
<tr>
<td>Moral Elsewhere Total</td>
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<td>0.41</td>
</tr>
<tr>
<td>Moral Total</td>
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</tr>
<tr>
<td>Nonmoral Here</td>
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<td>0.90</td>
</tr>
<tr>
<td>Nonmoral Elsewhere</td>
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<td>0.92</td>
</tr>
<tr>
<td>Nonmoral Total</td>
<td>1.31</td>
<td>0.90</td>
</tr>
<tr>
<td>Here Total</td>
<td>1.56</td>
<td>0.59</td>
</tr>
<tr>
<td>Elsewhere Total</td>
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<td>0.61</td>
</tr>
<tr>
<td>Total</td>
<td>1.55</td>
<td>0.60</td>
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</table>

<table>
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<tbody>
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<td>Moral Here Bad</td>
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<td>1.02</td>
<td>1.20</td>
<td>1.26</td>
<td>0.93</td>
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<td>Moral Here Good</td>
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<td>0.73</td>
<td>2.00</td>
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<td>1.00</td>
<td>1.00</td>
<td>1.12</td>
<td>0.95</td>
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<tr>
<td>Moral Here Total</td>
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<td>0.69</td>
<td>2.00</td>
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<td>0.95</td>
<td>0.00</td>
<td>1.20</td>
<td>0.91</td>
</tr>
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<td>Moral Elsewhere Bad</td>
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<td>2.00</td>
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<td>1.12</td>
<td>0.00</td>
<td>0.86</td>
<td>1.18</td>
</tr>
<tr>
<td>Moral Elsewhere Good</td>
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<td>2.00</td>
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<td>0.00</td>
<td>0.89</td>
<td>1.13</td>
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<td>Moral Elsewhere Total</td>
<td>1.58</td>
<td>0.69</td>
<td>1.90</td>
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<td>1.07</td>
<td>0.00</td>
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<td>1.13</td>
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<td>Moral Total</td>
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<tr>
<td>Nonmoral Here</td>
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<td>–0.40</td>
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<td>0.00</td>
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<td>Nonmoral Elsewhere</td>
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<td>–0.37</td>
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<td>0.00</td>
<td>–0.42</td>
<td>1.18</td>
</tr>
<tr>
<td>Nonmoral Total</td>
<td>–0.46</td>
<td>1.17</td>
<td>–0.50</td>
<td>–0.39</td>
<td>1.21</td>
<td>–0.05</td>
<td>–0.42</td>
<td>1.19</td>
</tr>
<tr>
<td>Here Total</td>
<td>0.56</td>
<td>0.72</td>
<td>0.48</td>
<td>0.24</td>
<td>0.87</td>
<td>0.08</td>
<td>0.40</td>
<td>0.81</td>
</tr>
<tr>
<td>Elsewhere Total</td>
<td>0.55</td>
<td>0.72</td>
<td>0.38</td>
<td>–0.09</td>
<td>1.05</td>
<td>0.00</td>
<td>0.23</td>
<td>0.95</td>
</tr>
<tr>
<td>Total</td>
<td>0.56</td>
<td>0.71</td>
<td>0.44</td>
<td>0.07</td>
<td>0.91</td>
<td>0.00</td>
<td>0.31</td>
<td>0.85</td>
</tr>
</tbody>
</table>
Overall, God was reported to be significantly more knowledgeable than concerned about all items, $F(1,174) = 99.41$, $p < 0.001$, $\omega = 0.60$. God was attributed with greater knowledge of than concern for moral items, Welch’s $F(1,140.02) = 6.93$, $p = 0.01$, adj. $\omega = 0.18$. God knew more than cared about good moral items (Welch’s $F(1,139.04) = 8.88$, $p = 0.003$, adj. $\omega = 0.21$) as well as bad moral items, Welch’s $F(1,140.88) = 4.91$, $p = 0.03$, adj. $\omega = 0.15$. However, God did not know good or bad moral information differently ($F(1,174) = 0.01$, $p = 0.91$), nor did he have any differential concern for good and bad items, $F(1,174) = 0.58$, $p = 0.46$. According to this sample, then, God knows moral information greater than he cares about it and shows no significant differences between His knowledge of and concern for good or bad behaviors.

3.2.2. God’s concerns

Regarding the items of what God cares about, a factor analysis solving for two factors demonstrates that there are two discrete components (Fig. 3, left): the moral component ($M = 1.59$, $SD = 0.69$, eigenvalue = 5.25; % variance explained = 39.65; $\alpha = 0.98$) and the nonmoral component ($M = -0.46$, $SD = 1.17$, eigenvalue = 25.00%, variance explained = 40.83, $\alpha = 0.99$).7

Sex ($F(1,79) = 2.07$, $p = 0.15$), age ($F(1,79) = 0.002$, $p = 0.96$), and religiosity ($F(1,79) = 1.09$, $p = 0.30$) showed no significant effects on the average amount of God’s concern of the moral items. Moreover, sex ($F(1,79) = 1.19$, $p = 0.28$), age ($F(1,79) = 2.13$, $p = 0.15$), and religiosity ($F(1,79) = 1.09$, $p = 0.30$) had no significant effects on the average amount of God’s concern of nonmoral items.

An ANOVA demonstrates that this sample attributed God’s concerns as significantly more moral than nonmoral, $F(1,174) = 201.19$, $p < 0.001$. These results are wholly unsurprising and entirely consistent with the results from the consensus analyses. However, God’s knowledge is inconsistent with participants’ stated beliefs that God knows everything and the results of the consensus analyses.

3.2.3. God’s knowledge

With some overlap of two items8 on an initial analysis, a Varimax rotated principle components analysis of God’s knowledge of this information (without the two overlapping items) yields two factors (Fig. 3, right): a moral factor

---

7 One item loaded awkwardly (UCONGC2) likely because it ran into the page following the corresponding knowledge item. As such, this item was deleted from all further analyses of God’s attributed concerns. Dropping this item raised the alpha of the moral items by 0.01 and their grand mean by 0.03.

8 The items were whether or not God knew if I was honest to my friends in St. Petersburg (ELSEWRG5) and if I told a lie to someone at UConn (UCONB1). Because these two items loaded highly on both factors for unknown reasons, I eliminated them from all further analyses.
(M = 1.79, SD = 0.40, eigenvalue = 5.25%; variance explained = 65.79, $\alpha = 0.98$) and a nonmoral factor (M = 1.31, SD = 0.90, eigenvalue = 25.00%; variance explained = 13.82, $\alpha = 0.99$). The very presence of two factors is a case of theological inconsistency insofar as God’s access to all knowable information should be collectively represented as one factor; as participants initially claimed that God is omniscient, there should not be any significant differences across categories. Neither sex nor age had significant effects on mean response to moral or nonmoral items (all $p \geq 0.42$).

An ANOVA demonstrates that mean response to questions about God’s knowledge of moral items was significantly higher than mean response to nonmoral questions, $F(1,174) = 21.45, p < 0.001$. Moreover, a paired t-test of the standard deviations of each category reveals that there was more variance among the responses to the nonmoral questions (M = 0.66, SD = 0.38) than moral questions (M = 0.22, SD = 0.29, t(87) = 9.51, Bonferroni’s adjusted $p < 0.001$); there is more consistency in responses to God’s knowledge of moral items than with nonmoral items.

---

Fig. 2. Confidence intervals ($\alpha = 0.05$) of mean ratings for item categories of gods’ concerns.

Fig. 3. Rotated factor loadings plot of God’s concern (left) and knowledge (right) items.
3.2.4. Spirit-masters’ minds

Recall from Section 1.4 that there were three variations in treatments of spirit-masters’ forms (woman, marmot, and bull). ANOVAs demonstrate that cher eezi type had no significant effects on mean ratings of proximate moral knowledge items ($F(2,85) = 0.24, p = 0.79$), concern ($F(2,85) = 1.39, p = 0.26$) or concern ($F(2,85) = 1.24, p = 0.30$), or on distant non-moral knowledge ($F(2,85) = 1.51, p = 0.23$) or concern ($F(2,85) = 0.50, p = 0.61$). So, even though type of resource is correlated with type of spirit-master (Purzycki, in press), the actual form of spirit does not have an effect on Tyvan conceptions of moralization or breadth of knowledge. As such, all results reported below are from the three pooled treatments.

A factor analysis using Varimax rotation solving for three factors demonstrates that the knowledge items do not constitute a single factor. Moreover, unlike the Abrahamic god, these items clustered into three domains (Fig. 4, Table 7): (a) moral behaviors conducted at the ovaa ($\bar{x} = 0.94, M = 1.09, SD = 0.81$), (b) moral behaviors conducted away from the ovaa ($\bar{x} = 0.95, M = 0.27, SD = 1.13$), and (c) all non-moral items ($\bar{x} = 0.99; M = –0.47, SD = 1.22$). Tyvans clearly make distinctions between domains of knowledge that cher eezi have in two dimensions: proximity of act to the ovaa and whether or not the act is moral. The same proximate moral ($\bar{x} = 0.95; M = 0.85, SD = 0.93$), distant moral ($\bar{x} = 0.94; M = 0.17, SD = 1.03$), and nonmoral ($\bar{x} = 0.99; M = –0.44, SD = 1.18$) factors loaded for the concern items. Sex showed no significant effects for the responses to each of these factors’ mean responses ($p > .05$) and age only showed significant effects for nonmoral knowledge, $F(36,85) = 1.78, p = 0.04$.

The fan of plots represents the distance from the spirit-master’s location; the cluster of items in the lower right sector are moral behaviors that take place at the spirit-master’s ritual cairn, behaviors that take place in Ak Dovurak and Kyzyl—distant cities in Tyva—are plotted between behaviors that take place in America, Moscow, and St. Petersburg. Clearly, Tyvans are reasoning about spirit-masters’ knowledge of moral behavior geographically.

If there is a general tendency to attribute moral concern and knowledge to supernatural agents, then moral items should rate significantly higher than the non-moral items. Overall, spirit-masters are more knowledgeable (Welch’s $F(1,150.74) = 49.53, p < 0.001$, adj. $\omega = 0.46$) and concerned (Welch’s $F(1,158.28) = 32.46, p < 0.001$, adj. $\omega = 0.39$) about moral information than nonmoral information.

If proximity to location plays a significant role in how Tyvans conceive of cher eezi’s access to information, this should also affect responses insofar as distant moral acts will be both less known and less cared about than proximate acts. Overall, the proximity of information to the spirit-masters’ location ($F(1,348) = 10.66, p = 0.001$) and moral content ($F(1,348) = 85.56, p < 0.001$) had significant effects on

Table 6

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Knowledge</th>
<th>Concern</th>
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<tbody>
<tr>
<td>df = 1(174)</td>
<td>df = 1(173)</td>
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<tr>
<td>Moral Here Bad</td>
<td>36.43</td>
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</tr>
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<td>Moral Here Good</td>
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<td>Moral Here Total</td>
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<td>Moral Elsewhere Bad</td>
<td>136.78</td>
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<td>Moral Elsewhere Good</td>
<td>117.74</td>
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<td>Moral Elsewhere Total</td>
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<td>Moral Total</td>
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<td>Nonmoral Here</td>
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<td>146.33</td>
<td>17.47</td>
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</tbody>
</table>

Independent variable (IV) = supernatural agent.
* $p > 0.05$ (Nonparametric tests yielded the same significant differences for all tests).

Fig. 4. Factor loadings plot of cher eezi’s knowledge items.
response. These two factors also had significant interaction effects on response, $F(1, 348) = 12.16, p = 0.001$.

More specifically, there were significant effects for proximity of moral act on masters’ knowledge (Welch's $F(1,157.27) = 30.93, p < 0.001, \omega = 0.38$) and concern ($F(1,174) = 17.76, p < 0.001, \omega = 0.29$). In other words, where behaviors take place plays an important role on how Tyvans reason about spirit masters’ minds; cher eezi are reported to know and care more about moral acts conducted at their places of mastery than those taken place distantly from such places.

There were no significant differences between their knowledge of good and bad behaviors conducted proximately ($F(1,174) = 2.25, p = 0.14$) or distantly, $F(1,174) = 0.33, p = 0.57$. There were also nonsignificant differences between their concern for proximate ($F(1,174) = 0.04, p = 0.95$) or for distant ($F(1,174) = 0.08, p = 0.78$) good or bad behaviors.

Moreover, while cher eezi were reported as more knowledgeable of local moral behaviors than concerned with them ($F(1,174) = 4.12, p = 0.04, \omega = 0.13$), there were no differences between their knowledge and concern for distant moral behaviors, $F(1,174) = 0.33, p = 0.57$.

In summary, participants gravitate towards moralizing spirit-masters’ knowledge and concerns, but this moralization is bound by location of the behavior in proximity to spirits’ domain of mastery. Even though moral concerns are not the culturally correct concerns of cher eezi, these results support the view that socially strategic information is more accessible when reasoning about supernatural agents.

### 3.3. Omniscience and moral concern

If there is a relationship between omniscience and moralization, attributed breadth of knowledge should predict knowledge and concern of morality. As addressed in numerous cross-cultural studies (Johnson, 2005; Lahti, 2009; Sanderson, 2008; Stark, 2001; Swanson, 1960), there is a strong positive relationship between omniscience and moral concern. To test for such a relationship among Tyvans, one question asked early in the survey inquired about the breadth of spirit-masters’ knowledge. The possible responses were: (4) She/It knows everything that happens in the world, (3) She/It only knows everything that happens in Tyva, (2) She/It only knows everything that happens in her area, and (1) She/It only knows what happens to her.

Out of 88 individuals, seven (8%) did not answer, three (3.4%) answered that the spirit-master only knows what happens to it, 45 (51.1%) answered that they know only what transpires in their area, five (5.7%) answered that they know all that takes place in Tyva, and 25 (28.4%) answered that they know everything that happens on earth. Five individuals answered with multiple responses and as these scale items range in the breadth of knowledge cher eezi are attributed, these responses were converted to means. Because participants overwhelmingly answered the question in at least two ways, I dichotomized the responses ($0 =$ only knows what happens to it, only knows things that happen in their domain; $1 =$ knows everything that happens in Tyva, everything that happens on earth).

If there is a relationship between omniscience and concern for morality, then attributed breadth of knowledge should predict knowledge of and concern for moral behaviors. While there were no significant effects for knowledge-breath on knowledge ($F(1,76) = 0.00, p = 0.99$) or concern ($F(1,76) = 0.02, p = 0.90$) of proximate moral items, attributed breadth of knowledge does in fact predict knowledge ($F(1,76) = 9.05, p = 0.004, \omega = 0.31$) and concern ($F(1,76) = 9.08, p = 0.004, \omega = 0.31$) for distant moral behaviors. This is consistent with previous findings of the positive relationship between omniscience and moral concern across populations, but these results are the first of their kind from a single population.

### 3.4. The moralization bias of spirit-masters’ minds

As reported above, spirit-masters have place-bound knowledge of moral information. A stronger test of the moralization bias hypothesis would be to analyze only data for individuals who did not list any interpersonal social behaviors among the things which anger spirit-masters (see Purzycki, 2010, 2012, pp. 232–252, n.d.). If Tyvans who do not freelist moral behaviors among the things which concern spirit-masters but rate their knowledge and concern of moral behavior higher than nonmoral information, this would strongly support the presence of such a bias.$^9$

Among the responses for those who did not list a single moral item among the things which please or anger spirit-masters ($n = 33; M_{age} = 40.68; SD_{age} = 15.56$; two did not report age; 13 males, one did not report sex; 13 reporting

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$^9$ Only 10 participants listed a moral item in the free-list task eliciting behaviors which please spirit-masters. Also, the only significant effects for listing moral items for the “anger” freelists were found on cher eezi’s knowledge of good moral behaviors which take place nearby ($F(1,63) = 6.21, p = 0.02$) and overall knowledge of moral behaviors (nearby ($F(1,63) = 4.44, p = 0.04$) which take place nearby their place of mastery. No other domains showed effects from having listed a moral item in this task.

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Table 7
Summary of rotated factor analysis for spirit-masters’ knowledge and concern items.

<table>
<thead>
<tr>
<th>Knowledge Items</th>
<th>Concern Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>Nonmoral</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>20.08</td>
</tr>
<tr>
<td>% Variance</td>
<td>51.49</td>
</tr>
<tr>
<td>$\alpha$</td>
<td>0.99</td>
</tr>
</tbody>
</table>
being both Buddhist and shamanist; 20 characterized themselves as just Buddhist), we find a similar pattern to the overall sample. Once again, proximity of information ($F(1,128) = 4$, $64$, $p = 0.03$) and moral content ($F(1,128) = 35.11$, $p < 0.001$) had significant effects on response and also showed significant interaction effects, $F(1,128) = 4.84$, $p = 0.03$. In summary, even though all of the participants in these analyses did not list a single interpersonal behavior among the things which please or anger spirit-masters, moral content had a significant effect on responses.

4. Discussion

The present work demonstrates that: (1) while participants claim that God knows everything, they show a particular sensitivity towards moralizing the content of God’s knowledge, (2) Tyvans likewise show biases towards moralizing spirit-masters’ knowledge and concerns even though this is not among their collectively held concerns, (3) Tyvans use geography when considering spirit-masters’ knowledge and concern of moral information, and (4) attributions of omniscience to spirit-masters predicts attributed concern for distant moral behavior. The results suggest that there is an underlying moral component to representing gods even though they may not explicitly care about such “moral” behaviors. In other words, despite the world’s religious diversity and cultural models, interpersonal social behavior is an essential constant in religious cognition. Gods may explicitly not care about morality, but moral domains nevertheless lie beneath the surface of explicit, reflective representations. As such, religious systems around the world may indeed be essentially about interpersonal social regulation and monitoring regardless of whether or not moral concern is explicitly attributed to gods. More concretely, nonmoral gods may nevertheless promote human morality. These results raise many compelling questions.

How “cultural” is the moralization of gods’ minds? In the case if Tyva, as morality is not a central or salient feature of spirit-masters’ concerns (Purzycki, 2010, 2011, 2012), such concerns do not appear to be “cultural” insofar as they are not as much a part of the widespread repertoire of explicitly attributed concerns as ritual and resource maintenance are. In this case, moralization is intuitive. Perhaps Tyvans use analogical reasoning in their post hoc moralizations of cher eezit’s minds insofar as such question might be priming the concerns other agents in the Tyvan pantheon; moral domains may be a latent association among Tyvan conceptions of spirit-masters by virtue of their association with other supernatural agents (e.g., Buddha). A stronger test of this sort would be to conduct the same study in a tradition without moralistic deities or consistent contact with traditions having such deities to determine whether or not there are similar effects. It remains doubtful, however, that such a society exists. Unfortunately, outside of my own ethnographic work in Tyva (Purzycki, 2010, 2012) and data collected in Fiji (Shaver, 2012, pp. 115–123), there is presently no available systematically collected, quantifiable, and therefore directly comparable data regarding what gods know and care about. Cultural anthropologists and other researchers of religion have a lot to gain from the collection of such data in order to assess the major assumptions which have been guiding research for the past century, as do the people whose traditions we may document who want an accounting of their beliefs for future generations.

Perhaps it is the case that domains of interpersonal social behavior are nested within other specific domains (e.g., ritual behavior, resource maintenance, etiquette etc.). Making sense of gods’ minds may prime these closely related clusters of cultural knowledge even though some domains are not among the culturally correct concerns ascribed to supernatural agents (see Huebner, Lee, & Hauser, 2010 on the relationship between convention and morality). Indeed, when children believe that a ghost is watching them, they cheat less in games even though no explicit moral concern is attributed to the ghost (Piazza et al., 2011). While many Tyvans feel no obligation to stop and pay their respects, it may be an underlying assumption that people should stop that brings moral systems to bear on responses to these questions.

It may very well be the case that humans have cognitive algorithms that tap into moral domains upon detection of agents both supernatural (Bering & Johnson 2005; Bering et al., 2005; Johnson, 2005; Johnson & Bering, 2006; Piazza, Bering, & Ingram, 2011; Randolph-Seng, & Nielsen, 2007; Rossano, 2007; Shariff & Norenzayan, 2007) and natural alike (Bateson, Nettle, & Roberts, 2006; Ernest-Jones, Nettle, & Bateson, 2011; Gray, Young, & Waytz, 2012; Haley & Fessler, 2005). In other words, perhaps mere agency-detection automatically prepares us for social interaction. This may explain why there were no significant differences in moralization between the zoomorphic and anthropomorphic spirit-masters. Again, however, we (Purzycki et al., 2012) found that a non-interfering alien species did not elicit different response times between moral and nonmoral questions.

If the concern items were asked about actual people, the moral questions would likely be rated higher; actual humans certainly care about being assaulted or treated with kindness. And, people care about a lot of things, so another remaining question is whether or not personal concerns can also drive explicit attributions of gods’ concerns. In the case of the present study, moral content renders responses inconsistent with explicit, culturally correct postulates. In one sitting, students claim both that God knows everything, but knows moral information better than nonmoral information. In Tyva, people might not readily freelist or discuss moral behaviors among the things which spirit-masters care about, but they appear to both know and care more about the latter relative to nonmoral information when asked in a survey limited to such questions.

Additionally, evidence suggests that omniscience can be quite intuitive; even young children grant supernatural agents with access to more knowledge than human agents (Barrett, Richert, & Driesenga, 2001; Knight, et al., 2004; Wigger, Paxson, & Ryan, 2013). This suggests that the cognitive foundations of omniscience may be more intuitive than not and “culture” merely builds on and exaggerates the intuitive stance of omniscience. But, is there a
moralization bias of supernatural agents in children? Developmental psychologists are in a prime position to answer these questions.

Why is there a close association between omniscience and concern for moral behavior? As found in cross-cultural studies which demonstrate a positive relationship between attributed breadth of knowledge and concern for interpersonal social behavior (Johnson, 2005; Sanderson, 2008; Swanson, 1960), the more spirit-masters know, the more they care about moral behaviors. However, there was variation in attributed breadth of knowledge in the case of Tyvans and perhaps this variation exists in most traditions (see Boehm, 2008; Pettazzoni, 1955). Still, the question remains as to how such conceptual packages become both more widespread and part of the explicit repertoire gods’ minds. The Abrahamic god is more consistently considered omniscient, so the question of what mechanism is responsible for such a shift remains unknown. As already discussed, some researchers suggest that under particular constraints, moralistic and omniscient gods are culturally selected because they maximize prosocial behavior (Shariff & Norenzayan, 2007). As societies become more complex, individual behavior more easily hidden from others, concepts of omniscient moralistic high gods may become not only more easily promulgated, but also more salient in individual minds. Cultural evolutionary approaches might focus on the source of the information such as authorities, peers, and parents (Boyd & Richerson, 1985; Richerson & Boyd, 2005). However, the present research suggests that the intuitions for moral concern are already there—they simply may not become explicit, reflective, and widespread until there are socioecological pressures to make them as such. In other words, their explicitness may be more effective as a social mediating device under particular conditions. The case might be the same for omniscience (Peoples & Marlowe, 2012; Roes & Raymond, 2003; Wallace, 1966).

Finally, the ultimate question of whether or not various explicit conceptions of gods’ minds have particular behavioral and fitness effects requires further investigation. Is there variation in levels of prosociality for populations who explicitly moralize their deities? Recall that evidence demonstrates that when God is conceived as being forgiving rather than punishing, people will actually defect on social obligations more often (Shariff & Norenzayan, 2011). This suggests that cultural models of gods do play an important role in interpersonal social behavior. Cross-culturally, it may be the case that punishing, moralistic gods make lasting, widespread cooperation more sustainable than they would if they were not moralistic. Again, however, explicit models of gods’ concerns may correspond to local pressures; they mediate sociality differently according to local conditions (Purzycki & Sosis, 2011). In the case of Inner Asia, ritual cairns mark territories and thus prime supernatural agency. If it is the case that ritual functions to minimize antisocial behavior through the priming of supernatural agency, it suggests that there are important long-term, complex relationships between socioecological pressures and human cognition that play an important role in how prosocial priming becomes differentially expressed and distributed across diverse contexts (Purzycki, 2010, 2011, 2012). Only a close accounting of the relationships between religious cognition, ritual, and context will allow us to answer such questions with confidence.

Acknowledgements

Many, many thanks to Candace Alcorta, Tayana Arakchaa, Justin Barrett, Adam Cohen, Brian Donahoe, the ECC gang at UConn, W. Penn Handwerker, Jessica McCutcheon, Nadia Oorzakh, the Sarygllars, Rich Sosis, Valentina Szükei, the students and staff at the Tyvan Institute for Humanitarian Research, the Tyvan National Orchestra, and the many people on opposite sides of the globe who participated in this study. Thanks, too, to Rita McNamara, Matt Rossano, John Shaver, Aijana Willard, and to the anonymous reviewers of previous drafts of this paper for their helpful, critical comments. This work was financially supported by Oxford University’s Cognition, Religion and Theology Project, the University of Connecticut’s Department of Anthropology, and the SSHRC-funded Cultural Evolution of Religion Research Consortium (CERC).

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.cognition.2013.06.010.

References


