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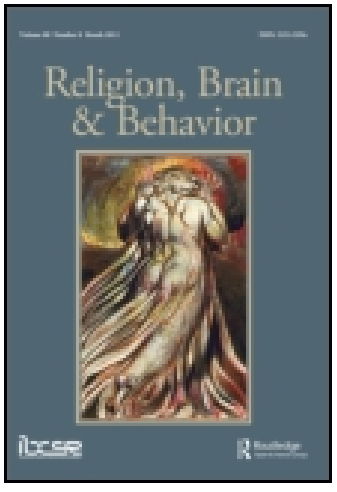


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# Fundamental social motives and the varieties of religious experience

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## TARGET ARTICLE

# Fundamental social motives and the varieties of religious experience

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Evolutionary theorists have explained universals in religion, but no integrative theory exists to explain why multiple aspects of religion vary within and between individuals and groups. We propose how four dimensions of religions – beliefs about nonhuman agents, religious rituals, community structures, and moral concerns and values – may change in response to the fundamental social goals of self-protection, disease avoidance, coalition formation, status seeking, mating and mate retention, and kin care. We review empirical research and provide testable hypotheses, and finally discuss implications of this theoretical framework for the study of evolution and religion.

**Keywords:** community; evolution; morality; motivation; nonhuman agents; religion; ritual

Theories about the evolutionary origins of religion have proliferated recently, mainly considering whether religion is an adaptation or byproduct (Bulbulia et al., 2008; Schloss & Murray, 2009). Many consider religion to be a byproduct of evolved cognitive and emotional systems for intentionality and agency detection, theory of mind, purity and contagion, and relationships (Atran & Henrich, 2010; Atran & Norenzayan, 2004; Boyer, 2001; Kirkpatrick, 1999). Religion might also be an adaptation insofar as religion promotes moral and prosocial behavior, cooperation, and group solidarity (Sosis & Alcorta, 2003; Wilson, 2002).

Such theories commonly start with the fact that there are universal aspects of religion. The central thesis of this paper is that evolutionary theory can account for cultural variability in religion. Evolution need not necessarily produce cultural universality (Crawford & Krebs, 2008; Kaplan & Gangestad, 2005; Tooby & Cosmides, 1995). Our view relies on seeing religion as comprised of flexible cognitive mechanisms, and showing predictable variation in different contexts (Purzycki & Sosis, 2009, 2011). Specifically, we consider four dimensions of religion (viz., beliefs about nonhuman agents, religious rituals, religious communities, and beliefs about moral order) that are responsive to fundamental social motivations: self-protection from humans and nature, disease avoidance, coalition formation, status seeking, mate acquisition and retention, and offspring care (Kenrick, Neuberg, Griskevicius, Becker, & Schaller, 2010).

We first present an overview of the malleability and variety of religious dimensions at both the group and individual levels. Next, we discuss variability across four dimensions of religion. We then hypothesize how each fundamental motivation is expected to shape

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these dimensions of religion. Finally, we discuss the broader implications of our approach for thinking about religion and evolution.

## Variation in religious experience

Religion is a universal phenomenon, at a certain level of abstraction. All major religions involve communities of individuals who share metaphysical beliefs, ritual behaviors, and prescriptions for moral order (Atran & Norenzayan, 2004; Saroglou, 2011). But along with this important universality comes religious change, which exists in nearly infinite forms within and across groups and individuals. We can observe historical changes at the group level; for example, the Roman Catholic papacy was challenged by leaders of the Protestant Reformation, indigenous worldviews were refashioned during colonization (Balagangadhara, 1994; Mignolo, 1995/2006), and Jewish thought evolved over millenia in response to changing ecologies and social environments (Seltzer, 1980). Changes in the religious landscape in the USA are evident even today, with approximately 25% of Americans now holding eclectic worldviews that are typically a blend of Eastern philosophies, ancient American Indian or pagan traditions, astrology, and individualistic interpretations of scriptural texts (Pew Forum on Religion & Public Life, 2009). Religious materials (sacred texts, music, icons, etc.) also exemplify shifts in religion by presenting new conceptualizations of deities, new rituals, modified religious social structures, or reinterpreted morals (Friedman, 1987/1997; Johnson, 2007).

Religious experiences also vary between individuals. Some religious people are paragons of compassion and forgiveness, while others are prejudiced, extremist, or violent (Allport, 1954, 1957). Many have sought to understand why some religious people will engage in, yet others will oppose, terroristic violence (Atran, 2003; Eidelson & Eidelson, 2003; Ginges, Hansen, & Norenzayan, 2009; Purzycki & Gibson, 2011).

Further, individuals change their religions, sometimes gradually and sometimes very quickly (James, 1902/1997; Paloutzian, Richardson, & Rambo, 1999; Starbuck, 1897). Changes in the religiosity of individuals have been charted over a lifetime (McCullough, Enders, Brion, & Jain, 2005; Rizzuto, 1979), observed even within a single day (Barrett & Keil, 1996), or seen momentarily in response to persuasive arguments (Shariff, Cohen, & Norenzayan, 2008).

How can we understand this religious variation and change? One very general explanation relies on rational choice theory, which claims that people shop for religions like economic commodities (Roof, 1999). However, why is it "rational" for people to choose certain religious affiliations over others? What motives impel such religious choices or changes? Our goal is to demonstrate how evolutionary theories can be employed to explain individual and group variability and changes in religious experience, drawing on diverse literatures in cultural psychology, social psychology, anthropology, and religious studies. In doing so, we hope to provide a framework for synthesizing previous research and impelling future research across several academic disciplines.

## Multidimensionality of religion

Many have recognized (e.g., Saroglou, 2011) the multidimensionality of religion, and there is a general consensus that religion and spirituality, broadly defined, include: beliefs about metaphysical, nonhuman agents; rituals and their associated emotions; community structures; and moral concerns and values (Table 1).

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Table 1. Examples of predictions for four dimensions of religion of fundamental social motives. Predictions are often contingent upon individual differences and local ecologies.

| | Dimensions of religion | | | |
|---|---|---|---|---|
| Fundamental social motives | Nonhuman agents | Religious rituals | Community structure | Moral order |
| Self-protection | | | | |
| Human threats | High God | "Just war" | Religious group solidarity | Loyalty laws |
| | Evil spirits | Secret rites | | Restrictive moral codes |
| | *Males*: Punishing God | Exorcisms | Religious out-group demonization | |
| | *Females*: Protecting God | Intercessory prayer | | |
| Natural threats | Provider God | Fertility (crops) rituals | Small groups | Reciprocity laws |
| | Protector God | | Tribes | Animism |
| | Natural entities | Thanks offerings | Elders | |
| Disease avoidance | Healing God | Washing rituals | Isolation of sick individuals | Purity laws |
| | Spirits of infirmity | Healing rituals | Religious exclusivity | Food taboos and food preparation laws |
| | | Burial rituals | | |
| Coalition formation | | | | |
| Forming friendly alliances | Benevolent God | Synchronous rituals/ chants | Egalitarian | Harm and care laws |
| | Lesser gods, goddesses and spirits | | | Generosity |
| | | Meditation | | |
| | | Food sharing | | |
| Status seeking | | | | |
| Gaining or maintaining respect from others | *Low status*: Authoritarian God | Penance | Priests | Authoritarianism |
| | *High status*: Distant God | Expressive rituals | Shamans | |

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Table 1 (*Continued*)

| | Dimensions of religion | | | |
|---|---|---|---|---|
| Fundamental social motives | Nonhuman agents | Religious rituals | Community structure | Moral order |
| | | Rites of passage | Hierarchical | |
| Mating | | | | |
| Finding, attracting and retaining mate(s) | *Mating*: Deity as husband or lover | Fertility rituals | *Plentiful ecology:* Monogamy | Premarital abstinence |
| | *Mate retention*: Judgmental God | Marriage | *Harsh ecology:* Polygamy | Mating restrictions |
| | | | | Marital regulations |
| Kin care | | | | |
| Identifying and caring for kin | Parental God | Circumcision | Families | Pro-natalist views |
| | Madonna | Baptism | Clans | Spiritual genealogies |
| | Goddesses | Initiations | Fictive kin | |
| | Ancestral spirits | Day of the Dead | Human remains | |

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### *Beliefs about nonhuman agents*

In every society, there are widespread beliefs in immaterial, supernatural, or metaphysical nonhuman agents. Although people in Western religions often conceptualize a high, moralizing God (Gervais & Norenzayan, 2012; Shariff, Norenzayan, & Henrich, 2009), there is substantial variability in the number and kinds of nonhuman agents recognized across religious traditions, including deities, ancestral spirits, saints, angels, demons, immaterial essences, energetic forces, and natural entities (e.g., celestial objects, animals, etc.; see Hopfe & Woodward, 2004).[1]

Further, people of the same religion may conceptualize such agents differently. Individuals in the Abrahamic traditions variously characterize God as benevolent or authoritarian, or as engaged versus disengaged from human affairs (Froese & Bader, 2010). Muslims differ in how much they think of God as person-like (*Lāhūt*) versus unimaginable and absolute (*Hāhūt*) (Glasse, 1989/2002).

A central focus of some studies on evolution and religious cognition is that nonhuman agents have socially strategic knowledge and powers to reward or punish (Guthrie, 1993; Purzycki et al., 2012), so as to deter people from cheating or acting immorally (Shariff, Norenzayan, & Henrich, 2009; Shariff & Rhemtulla, 2012). Supernatural agents are often thought to hear petitions for help and give blessings (e.g., rain or good health); and priming divine concepts sometimes makes people act more prosocially (Johnson, Li, Cohen, & Okun, 2013; Shariff & Norenzayan, 2007), but not always (Galen, 2012; Preston, Ritter, & Hernandez, 2010; Saroglou, 2012).

Because such agents are often perceived as actors in the social world of religious adherents, beliefs about nonhuman agents give rise to religious rituals often meant to exhort their favor or appease their anger (Horton, 1993). Thus, we now turn to religious rituals.

### *Religious rituals*

Durkheim (1912/1995) argued that rituals constitute the fundamental core of religion as a social phenomenon. Yet religious ritual has received little attention among psychologists, and definitions of ritual do not always emphasize the same characteristics (Spilka, 2005). We define religious ritual as a deliberate, religiously prescribed act or pattern of action that is communicative, transactional, and directed toward nonhuman agents (Lawson & McCauley, 1990; Whitehouse, 2004). By transactional, we mean that people act in order to invoke a response from the target nonhuman agent. These acts include behaviors as diverse as reciting a blessing over a family meal, praying the rosary, sacrificing an animal, sending the deceased to the afterlife, or participating in a pilgrimage like the *Hajj*.

Rituals are typically intended to influence nonhuman agents, and variability in the type of ritual (e.g., the extent of emotionality and pageantry, repetitiveness, frequency of performance, type of objects used, etc.) depends on concepts of nonhuman agents. Rituals are often intended to influence other *human* agents, or may be intended to draw upon impersonal, metaphysical forces to gain mastery over the world. Rituals also serve important social and psychological functions such as directing the emotions (d'Aquili, 1985; Pruyser, 1968), gaining a sense of protection or control, or increasing human solidarity. Further, rituals can be central in defining a religious group structure (Saroglou, 2011; Turner, 1966/1995).

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### *Community structures*

Kenrick et al. (2010) have proposed that social motivations lead to specific social geometries in groups. For example, status competition often results in hierarchical groups; self-protection motivations lead to exclusivity; and pair bonds will be emphasized when reproduction is most salient. We argue that social motives will, likewise, affect the religious social structure.

Social groups vary in their hierarchical and vertical structure (Fiske, 1992; Triandis & Gelfand, 1998), and Wallace (1966) proposed that the structure of religious groups generally corresponds with the types of religious rituals performed. Communities with complex rituals require religious specialists who are knowledgeable about the ritual requirements and who are trained to interact with nonhuman agents in the prescribed manner (McCauley & Lawson, 2002). The collective tendency to esteem these religious adepts typically leads to a hierarchical structure within the group, with priests, shamans, or elders holding higher status. In addition, ritual participation often signals and reinforces group membership more generally (Cohen, Hall, Koenig, & Meador, 2005). In contrast, some rituals are intended to unify the group, or reduce the status hierarchy (Turner, 1966/1995). Drumming circles, choral music, foot washings, and sharing emotional religious experiences (James, 1902/1997) can all establish unity and maintain a more horizontal and egalitarian group structure.

Unfamiliarity with the group's rituals may lead to exclusion from some religious communities; and individuals who do not meet the criteria for group inclusion may be renounced by the group or barred from ritual participation.

### *Moral concerns and values*

Religion is often central in defining and regulating morality and values within a group. Religions have both similarities and differences in their morals (Cohen & Rozin, 2001). Yet even within a religious tradition, people can have different moral concerns or emphasize different ones, such as harm and care, fairness and reciprocity, purity or sanctity, and authority (Haidt, 2007). Schwartz's (2012) cross-cultural work also lends important insights about the relations between different values.

Moral concerns and values are just two aspects of an individual or group's broader worldview. People universally develop a more comprehensive understanding of what is in the world (God, spirits, demons, etc.), what can be known about the world (what is safe to eat, what is fair, etc.), how things in the world are ordered and represented (meaningfulness of events, space, or time), and eschatological beliefs (beliefs in an afterlife, reincarnation, etc.). All of these have moral implications, including affording the proper respect to other agents in the world, how to behave morally in the world, and the moral consequences of behavior (Johnson, Hill, & Cohen, 2011; Koltko-Rivera, 2006). Religious groups are highly influential in communicating and shaping these worldviews. However, in the sections ahead, we will use the term "moral order" to refer specifically to the set of moral concerns and values that, in part, constitute one's religious worldview.

These four dimensions of religion – nonhuman agents, rituals, community structures, and moral order – provide the framework for what becomes an intricate mosaic of religious variability. We propose that variation in these dimensions of religion, between and within individuals and groups, can be better understood by considering the social motivations we discuss next.

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**Fundamental social motives and religious variation**

Evolution has provided people everywhere with motivations that tended to enhance the survival and reproduction of our ancestors. These motivations include: self-protection from humans and nature, disease avoidance, coalition formation, status seeking, mate acquisition and retention, and kin care (Kenrick et al., 2010). We focus on this theory of fundamental social motivations because it has been well articulated, is evolutionarily grounded, and each motivational system has been empirically shown to trigger different, adaptive patterns of cognitive and behavioral responses, ranging from attention, memory, conformity, economic decision-making, and other psychological processes.

Of importance for our perspective, each motivational system is activated by different threats and opportunities; and different kinds of social problems (e.g., gaining status versus finding a mate) are accomplished with a set of functional, domain-specific mechanisms. People do not make decisions using the same criteria in interactions with their children, their mates, their friends, or their superiors, for example. To be adaptive, the different systems must be flexible and sensitive to different kinds of decision rules and environmental inputs. These motivations are more or less salient depending on individual differences, situational contexts, an individual's life history stage, reproductive strategy, and local ecologies.

Our theoretical model (Figure 1) illustrates *antecedents* that, we contend, activate fundamental social *motivations* that, in turn, differentially affect the *dimensions of religion*. Table 1 provides examples of how dimensions of religion (columns) are hypothesized to respond when specific fundamental social motives become salient (rows). In what follows we discuss these predictions, provide a summary of available key studies supporting our model, and provide examples of religious beliefs or practices that comport with our analysis. These examples are not intended to be exhaustive, nor as empirical evidence of our propositions, but as real-world examples to lend clarity to the phenomena being discussed. As previously mentioned, we recognize that these are just examples and that these examples suggest the need for systematic, empirical testing. Further, for any of these examples, it is surely possible to find a counter-example, which may suggest an alternative hypothesis or the importance of identifying confounding or moderating variables.

Thus, we acknowledge that our predictions are in need of empirical testing, and we will provide specific examples of ways of testing our hypotheses at the individual and group levels of analysis. At the individual level, for example, we will consider the effects of chronic individual differences in, and temporary activation via priming of, the relevant

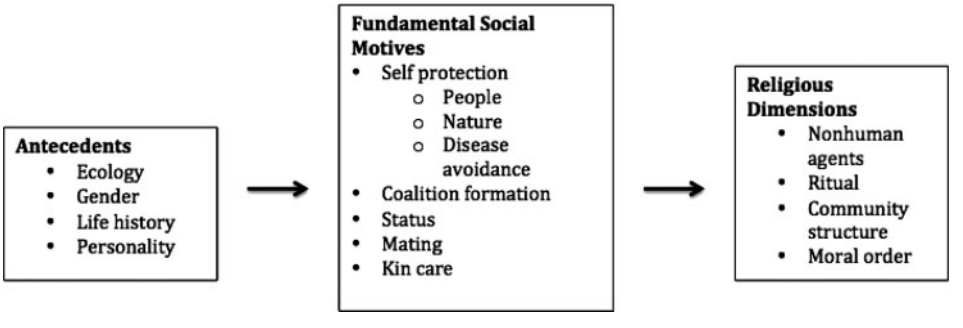


Figure 1. Conceptual model showing antecedents to fundamental social motives that, in turn, influence four dimensions of religious experience.

social motives. At the group level, we will point to data sets like the Standard Cross-Cultural Sample (Murdock & White, 1969), the World Values Survey (2009), the Ethnographic Atlas (Murdock, 1967), and the Human Relations Area Files (Murdock et al., 1965).

The variety found in religious systems is certainly constrained by scriptural texts, the broader culture, limits of human cognition, and core beliefs that are transmitted across generations. However, we contend that religious dimensions are also quite malleable; open to new interpretations, localized differentiations, new revelations, and emphases on different scriptural texts from time to time; and even amplification of those texts. Our intent is to initiate a discussion about the ways in which religious beliefs, ritual practices, religious communities, and notions of morals and values are responsive to a set of fundamental social motives and basic human needs.

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### *Self-protection*

We will discuss how self-protection from humans, natural events, and disease can be considered separately because the affective, cognitive, and behavioral processes that result from these motivations are, in many ways, functionally distinct (Neuberg, Kenrick, & Schaller, 2011).

#### *Self-protection from humans*

Living in close contact with other humans produces benefits but also gives rise to threats from both in-group transgressors and out-group members. Consequently, humans have developed a complex system of self-protection cognitions and behaviors to deal with such threats. Self-protection motivation generally increases interpersonal aggression, but there are individual differences in both the perceptions of, as well as the responses to, particular kinds of threats (Cottrell & Neuberg, 2005). Evidence from the Standard Cross-Cultural Sample indicates that people who are chronically concerned with physical harm or in constant competition for resources are more distrustful and punishing (Roes & Raymond, 2003). We propose that self-protection motives can lead predictably to religious responses, starting with beliefs about nonhuman agents.

*Beliefs about nonhuman agents.* Individuals who feel threatened and aggressive may believe that God, ancestral spirits, prophetic voices, or religious leaders also endorse violence, thereby increasing or justifying their own willingness to punish others (Bushman, Ridge, Das, Key, & Busath, 2007; Johnson et al., 2011).

Adult males and others who are well suited for physical confrontation may be more likely to endorse belief in wrathful nonhuman agents. However, females, youths, or elderly individuals may be less able to respond aggressively. Hence, we predict that males (and stronger individuals) are more likely to see nonhuman agents as warrior-like when self-protection motives are activated, and that less physically capable individuals will conceptualize nonhuman agents as protecting and delivering. National surveys do show that less physically capable individuals tend to conceptualize God as saving and protecting, rather than as avenging (Froese & Bader, 2010).

Self-protection motivations are also expected to lead to beliefs in malevolent nonhuman agents (i.e., demons or evil spirits). Activating self-protection causes people to become especially accurate and rapid in detecting threats from potentially dangerous others (e.g., angrily expressive male strangers; see Becker, Kenrick, Neuberg, Blackwell, & Smith, 2007), and quicker to startle in ambient darkness (Grillon, Pellowski,

Merikangas & Davis, 1997). As people become increasingly vigilant they are more likely to misattribute anger to emotionally neutral male faces (Maner et al., 2005). We predict that self-protection threats will lead individuals to attribute angry or emotional states to nonhuman agents as well (e.g., demons, an angry volcano, a wrathful goddess).

*Religious rituals.* Self-protection motivation may lead to increased intercessory prayer and sacrificial offerings to appease angry nonhuman agents. Because a critical line of defense is the ability to identify friend or foe, activation of self-protection motivation is also likely to lead religious individuals and groups to demand demonstrable proofs of in-group membership or loyalty. Under threat, costly signals of commitment to the group may be emphasized (Sosis & Alcorta, 2003), such as secret or complex rites (e.g., exclusive Mormon temple ceremonies; see Flake, 1995) and difficult-to-fake bodily markings, such as circumcision or tattoos. While all religious groups involve some form of proof of membership or loyalty, individuals and groups also vary in this regard. Some groups have highly complex rituals that partially function to distinguish in-group and out-group members (e.g., Sabbath observance rules among Orthodox Jews). Furthermore, within groups, some individuals are more concerned than others with such rules and with identifying members who are more committed to the group.

When self-protection motives impel inter-group conflict, rituals often inspire courage. Examples are songs like the Battle Hymn of the Republic in Christendom, a Samoan War Chant, or the recitation of the traditional Koranic war chapters, al-Tawba and Anfal (Lincoln, 2003). The belief that the conflict is God's may be powerfully inspirational (Johnson, 2007).

Moreover, because self-protection motives can heighten belief in malevolent agents (e.g., demons or witches), exorcism, summoning the dead, and deliverance rituals intended to identify, communicate with, or cast out evil spirits may become more prevalent. Although such rituals have received little attention in the literature, they played a critical role in early US history (e.g., Salem witch trials) and are found to some extent in all religions (Behrend & Luig, 2000; McNamara, 2011).

*Community structure.* Beliefs in a powerful, moralizing God appear to be beneficial in maintaining in-group cooperation, particularly in groups that are too large for people to effectively monitor other group members (Shariff & Norenzayan, 2011; Shariff et al., 2009). Loyalty to the religious group may be particularly important when there is a high moralizing God (Vail et al., 2010).

Terror management theorists posit that people feel potentially crippling anxiety from an awareness of death, causing the bolstering of worldview defense, in-group identity and out-group denigration (Pyszczynski, Greenberg, & Solomon, 1997). When self-protection motives are activated, the most religious may become the most condoning of punishment for out-groups (Altemeyer & Hunsberger, 1992; Wylie & Forest, 1992).

Self-protection motives tend to increase conformity and lead people to become more agreeable (Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006; White et al., 2012). Because they are less able to aggressively defend themselves, women, children, the infirm, and the aged may be especially likely to gather together in religious groups when faced with threats to personal or group safety.

*Moral order.* To ascertain group membership, highly restrictive or complex moral codes may be instituted to a greater degree when self-protection motivation is high (Table 1). For example, many Jews adhere to complex food regulations (*kashrut*), as do many

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Hindus (Appadurai, 1981). Such laws partly function to reinforce group solidarity and keep the group separate from (potentially more powerful) out-groups (Janoff-Bulman & Sheikh, 2006; Johnson, White, Boyd, & Cohen, 2011). Further, the stricter the rules in religious groups, the longer their endurance (Sosis & Alcorta, 2003). Effects of self-protection on morals may be strongest among conservatives, who are more likely to endorse the moral foundation of group loyalty (Haidt, 2007).

*Hypotheses.* We predict that able-bodied individuals who are focused on self-protection are likely to: (1) conceptualize nonhuman agents as moralizing or wrathful; (2) endorse religiously mandated aggression; (3) devise methods to identify in-group religious loyalists; and (4) denigrate or aggress against out-groups. Conversely, individuals who are less able to protect themselves are more likely to: (1) conceptualize protecting nonhuman agents; (2) engage in increased intercessory prayers and sacrifices; (3) be more agreeable, aggregate, and caring for in-group members in religious communities; and (4) promote more restrictive moral codes affording identification of in-group members and signaling loyalty.

Individual difference measures of many of these constructs are available. Froese and Bader (2010) and Johnson, Okun, and Cohen (2013b) provided measures of authoritarian God concepts. At the group level, one can examine membership rates in churches with different degrees of authoritarian orientation during times of economic prosperity versus hardship (McCann, 1999; Sales, 1972). Religious publications and sermons may serve as dependent variables on the cultural level of analysis (Morling & Lamoreaux, 2008). Implicit and explicit measures of prejudice (Greenwald, McGhee, & Schwartz, 1998) and crime reports could be operationalizations of religious prejudice and aggression.

### *Self-protection from natural events*

People may also be placed in jeopardy due to natural events such as hurricanes, droughts, or animal attacks in different ecologies. We expect individuals to respond religiously to self-protection threats from naturalistic causes in particular ways.

*Beliefs about nonhuman agents.* In monotheistic belief systems or in industrialized geographical areas, natural events have been attributed to a capricious or punishing God (Aten et al., 2008), deities, or spirits. On the other hand, nonhuman agents can also be thought of as protecting and delivering in times of trouble – calming the storm, ending the drought, or providing *mana* in the desert. When the cardinal concern is obtaining food, water, and shelter from the elements, we predict that people will become increasingly likely to place their hope in protective and beneficent nonhuman agents (Table 1).

Many people live in areas where resources are plentiful but food production requires substantial physical labor and favorable weather conditions (e.g., farming in Tibet, fishing in Indonesia). In such ecologies, self-protection would be expected to center on harmonious relations with nonhuman agents. In these ecologies, natural or celestial objects may be accorded the same respect given to revered humans (Hallowell, 1960/1975; Horton, 1993; Tambiah, 1990). Viewing parts of the natural world as kin may ultimately help to maintain an optimal balance in animal/human populations (Atran & Medin, 2008; Ingold, 2000; Medin, Ross, & Cox, 2006); and indigenous people may be careful to limit the taking of animal, fish, and bird life to what is needed (cf. Hames, 2007).

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*Religious rituals.* People who have little control over their natural environment often relate with celestial objects, trees, fire, water, and so forth in social ways, giving rise to animistic forms of spirituality, wherein rituals are designed to communicate with, appease, or embody these agents (Bird-David, 1999; Hallowell, 1960/1975; Harvey, 2006; Turnbull, 1961). People may develop rituals or offer sacrifices as thanks for an abundant harvest or hunt. Indeed, many biblical sacrifices were conducted as thanks offerings (e.g., the Hebrew feast of First Fruits).

*Community structure.* People in naturalistic environments must join together in close relationships in tribes or clans in order to share physical labor, resources, hunting and gathering prowess, and critical knowledge about the environment (Aktipis, Cronk, & de Aguiar, 2011; Ingold, 2000). This shared knowledge often includes religious-medicinal practices, and reinforces beliefs about nonhuman agents who are often deemed to be social actors (Harvey, 2006). Small tribes, clans, and kinship groups may also look to wise elders or dominant individuals both to interpret the signs in the heavens and earth, and to protect and provide by conducting rituals or dispensing accumulated wisdom.

*Moral order.* We expect moral order to emphasize respect and reciprocity for those threatened by nature and living in small groups. In order to survive, even people living in urban areas must help one another in times of natural disaster. These prosocial behaviors have been associated with increased spirituality and can be important in comforting and unifying the community following a disaster (Alawiyah, Bell, Pyles, & Runnels, 2011; De Silva, 2006; O'Grady, Rollison, Hanna, Schreiber-Pan, & Ruiz, 2012).

*Hypotheses.* We hypothesize that natural threats to self-protection lead to: (1) thinking of natural entities as having agency; (2) religious rituals related to the production of food, shelter, and safety; (3) small, cohesive communities; and (4) endorsement of moral codes grounded in reciprocity, relationship, and respect.

Anthropologists have researched the religious characteristics of people living in naturalistic environments but there has been much less research in psychology regarding the interaction of humans and nature – particularly in nonurban areas (cf. Medin, Ross, & Cox, 2006). Awe, a sometimes spiritual emotion, has been theorized to result from the need to expand one's cognitive repertoire based on a stimulus that one cannot accommodate (Keltner & Haidt, 2003). Awe and spiritual wonder often occur in response to encounters with nature (James, 1902/1997). Future research important to both psychologists of religion and to environmental policymakers would involve examining the extent to which increased frequency of exposure to naturalistic environments has led some individuals to reconstruct (or cling to) certain religious beliefs and practices.

### *Disease avoidance*

Humans face pervasive threats due to disease transmission and thus are much attuned to others who may possess heuristic cues to disease, or who are likely to communicate pathogens to which one has no immunity (Schaller & Park, 2011). These biases are enhanced in individuals who are susceptible to becoming ill. For example, women in their first trimester of pregnancy tend to be more xenophobic, presumably because their immunological defenses are suppressed (Navarrete, Fessler, & Eng, 2007).

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*Beliefs about nonhuman agents*

People all over the world have developed theories of witchcraft, spiritual attack, or demon possession to explain disease and death (Shweder, Much, Mahapatra, & Park, 1997). We hypothesize that beliefs in evil spirits, spirits of infirmity, and curses are likely to play a more prominent role in social interactions and religious discourse in ecologies around the equator (where diseases proliferate), in areas where good hygiene and biomedical explanations are unavailable, or among individuals who are more motivated to avoid disease (Table 1).

The need for an intervening healing power or spiritual healer may also increase when people feel particularly vulnerable to disease. These beliefs may be physically beneficial. Belief in a benevolent God tends to predict slower disease progression and better health outcomes, while belief in a harsh God predicts faster disease progression and worse outcomes (Ironson et al., 2011).

*Religious rituals*

Rituals appealing to a healing deity or spirit, or religious ceremonies utilizing various herbs, poultices, and tonics to drive out spirits causing infirmity may be conducted as remedies for disease (Turner, 1994/1998). Indeed, religious rituals involving blessed oil, holy water, holy icons, and so forth can lead sick individuals to experience a sense of connectedness with the divine, which may promote healing (Fouka, Plakas, Taket, Boudioni & Dandoulakis, 2012; Healing, 1988).

Rituals can also be seen as part of an evolved precaution system for detecting and ameliorating threats (Boyer & Liénard, 2006). Ritual washings performed in many religions (e.g., foot washings, hand washings, ritual baths) might have decreased the risk of disease transmission in our ancestral past. The disposal of decomposing bodies is also critical in keeping communities free from disease, and nearly all religious groups define proper burial rites that separate the living and the dead. As we mentioned above, such anecdotes cannot be taken as strong evidence for our propositions, and we also hasten to acknowledge that religious activities could just as often provide vectors for disease transmission. For example, rituals involving food sharing, or rituals that invite humans to be in close contact, may spread disease.

*Community structure*

Beliefs about malevolent spirits and spiritual uncleanliness as sources of disease have led to avoidance of the sick and dying (Rozin, Markwith, & Nemeroff, 1992), such as the expulsion of diseased members of a community (e.g., lepers) – a practice that may have protected communities from further disease contamination.

The prevalence of disease across ecologies is correlated with a range of cultural and personality variables, such as extraversion, sexual conservatism, xenophobia, and religious diversity (Faulkner, Schaller, Park, & Duncan, 2004; Fincher & Thornhill, 2008). Group boundaries, such as those created by religious groups, could serve to increase avoidance of strangers and, thereby, may effectively reduce disease transmission.

*Moral order*

Many religions have moral codes relating to behaviors that also relate to the threat of disease, such as regulations about washing, menstruation, and food. Biblical texts restrict contact with bodily fluids and prescribe social exclusion for those who violate such laws (e.g., Leviticus 20:18). Hindus, too, often heed moral taboos regarding food preparation

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by women who are menstruating or who have recently given birth (Flood, 1996). The Hua in New Guinea have complex food preparation rules because they believe that food carries a substance, *nu*, that transmits the moral essence and social status of the person who prepared the food (Meigs, 1988).

Interestingly, facial expressions of disgust are the same after exposure to physical disease threats as after exposure to certain moral violations (Chapman, Kim, Susskind, & Anderson, 2009), and prior research shows that a desire to wash one's hands increases after committing moral transgressions (Zhong & Liljenquist, 2006). It is understandable that disgust is often recruited to enforce moral restrictions (Rozin, Haidt, & Fincher, 2009).

*Hypotheses*

Under disease threat, we predict that: (1) beliefs in malevolent spirits, unclean souls, supernatural forces, or witchcraft will increase; (2) religious cleansing and healing rituals will proliferate; (3) religious groups will become increasingly fractionated and exclusive; and (4) there will be increased moral concerns regarding purity, and more religious rules regarding food, as well as menstrual taboos and rules about contact with the dead.

To test hypotheses related to individual differences, an important measure will be the Perceived Vulnerability to Disease scale (Duncan, Schaller, & Park, 2009). Disease threat can be primed experimentally by presenting images of bacteria, viruses, and people with disease cues (Mortensen, Becker, Ackerman, Neuberg, & Kenrick, 2010), or by exposing participants to foul odors (Tybur, Bryan, Magnan, & Hooper, 2011). At the group level, data on religon can be linked with data on the number of distinct pathogens in different ecologies (Schaller & Murray, 2008).

### *Coalition formation*

Coalition formation is critical for human survival (Henrich & Boyd, 1998). Although the desire to form coalitions varies by cultural group (Kim, Sherman, Ko, & Taylor, 2006), the motivation to form coalitions may be most salient to individuals who are lonely or socially rejected. Next we discuss how the motive to form coalitions could relate to conceptualizations of friendly spirits, socially unifying rituals, egalitarian religious communities, moral concerns, and values emphasizing prosocial behavior (Table 1).

*Beliefs about nonhuman agents*

A coalition formation motive is likely to lead religious people and groups to more frequently represent the divine as a benevolent friend (e.g., Jesus the Good Shepherd, Krishna the charioteer), to look toward a spirit guide for wisdom, or to petition a local deity for favor (Shahar & Weller, 1996). Stark (2001) has shown that many people respect and relate with "lesser" deities and familiar spirits (e.g., Shinto *kami*) as nonhuman members of their social group. This is in accord with research showing that, when primed with loneliness or social rejection, people are more likely to think of God, animals, and inanimate objects in very person-like ways (Epley, Akalis, Waytz, & Cacioppo, 2008).

*Religious rituals*

Religious rituals under coalition formation could serve to unify and expand the group to a greater degree. Religious activities such as synchronous rituals, drumming circles, dances, and familiar songs can promote bonding between group members (Wiltermuth & Heath, 2009). Shared religious food rituals, such as potluck suppers (Sack, 2000), festivals

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(Toomey, 1992), familial acts of giving to the divine (Babb, 1975) or to ancestral spirits (Janowski & Kerlogue, 2007), or daily rituals at the family altar (Stark, 2001), also increase social cohesion and perceived closeness to both human and nonhuman agents (Rozin, 1990).

Religious experience often involves a desire for self-transcendence (Koltko-Rivera, 2006), which Benson, Roehlkepartain, and Rude (2003, p. 205) define as a state "in which the self is embedded in something greater than the self." Otto (1923/1958) described self-transcendence as the religious individual's sense of the *numinous* – an awareness of an immaterial, wholly other, transcendent being experienced as very real. Those with a belief in a transcendent or person-like concept of supernatural agency may be more likely to seek social relations with the agent through communicative rituals. Because sensing the presence of the divine or other spiritual being(s) may be enhanced by the presence of other humans, through group ritual performances, it is important to consider communicative rituals in the context of coalition formation.

Coalition formation may also entail thinking about oneself as part of a larger whole with all of humanity, with nonhuman agents, nature, or the cosmos. When the aim is to forge coalitions with these kinds of distant others, meditative practices are more likely to be employed, producing a loss of the sense of self and a perceived merging with another object or with an "ultimate reality" (Newberg & d'Aquili, 2000).

### *Community structures*

The friendship and social support available to members of a church, mosque, or other religious group is often an important benefit of religion. Indeed, Diener, Tay, and Myers (2011) found that the relationship between religiosity and subjective well-being is, in part, mediated by the feelings of social support that a religious community can provide. Relationships with others in a religious group buffers the impact of negative events (McIntosh, Silver, & Wortman, 1993), increases survival rates (McCullough, Hoyt, Larson, Koenig, & Thoresen, 2000), and promotes positive coping strategies and reduces stress (e.g., Thorsteinsson & James, 1999; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Further, belief in the care and concern of a benevolent God is associated with higher self-esteem (Benson & Spilka, 1973), less depression (Rosmarin, Krumrei, & Andersson, 2009), and increased prosocial behavior (Johnson et al., 2011) – attributes that may bidirectionally aid in the formation of close relationships with others.

We predict that belief in benevolent deities and spirits is more likely to be associated with horizontal and egalitarian community structures than with hierarchical structures. The desire to form cooperative alliances may explain why individuals today may choose "seeker-friendly" churches rather than more exclusive or authoritarian religious groups. Another example of the proposed link between benevolent concepts of God and a horizontal community structure may be seen among Mormons. Mormon households regularly share food and monetary resources with other church members and satisfy nearly all ministerial responsibilities on a volunteer basis (Bushman, 2008). These practices correspond with the Mormon belief that God is a benevolent Father. Religious participation is associated with higher rates of prosocial behavior in many cultures such as volunteerism (Ruiter & De Graaf, 2006); and, indeed, this relation is exceptionally strong among Mormons (Johnson, Okun, & Cohen, 2013a).

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*Moral order*

Stark (2001) has argued that the belief that one is part of an extended line of deceased ancestors or that one shares the world with friendly spirits tends to foster a collectivist culture with social norms and values of generosity, cooperation, and care for others. This could relate to Haidt's (2007) moral domain of refraining from harm and providing care, and to Schwartz's (2012) values of benevolence and universalism. We predict that people high in coalition formation motives will more highly value religious laws related to these moral concerns and values. Indeed, the ideological leaders of many religious groups have been benevolent role models, such as Jesus, Mother Theresa, Buddha, or Mohandas Gandhi (Turner, 1966/1995).

Finally, the development of a moral or benevolent self-identity can lead to the expansion of conceptual group boundaries and a desire for group inclusivity (Reed & Aquino, 2003). This, we note, is different from our predictions of exclusivity and aggression resulting from self-protection motivations.

*Hypotheses*

We predict that coalition formation motives will lead to an increased propensity to: (1) conceptualize God as benevolent or to hold beliefs in friendly, local, or "lesser" gods, goddesses, saints, and spirits; (2) participate in unifying religious rituals; (3) seek membership in socially supportive and egalitarian religious communities; and (4) engage in cooperative and caregiving behaviors toward both religious in-group and out-group members.

Several adjective checklists examine individuals' concepts of God (Benson & Spilka, 1973; Johnson, Okun, & Cohen, 2013b; Krejci, 1998), which can be used to test the prediction that belief in a benevolent God will increase under coalition formation motivation. Moral emphases on harm and care can be measured with Haidt's (2007) moral foundations questionnaire. The Schwartz (2012) value survey has scales for benevolence and universalism.

***Status seeking***

People are motivated by the fundamental motive to achieve and maintain status, yet there are gender, individual, and life stage differences in status motivation (Kenrick et al., 2010). Moreover, groups manage status motivations in distinct ways, such as horizontal or vertical social relations (Fiske, 1992; Triandis, 1996). Whereas in some religious groups all are equals (e.g., Unitarians; Kelley, 1972), other religious groups have developed highly elaborated status-based priesthood (e.g., Catholicism) or caste systems (e.g., Hinduism; Dumont, 1981).

*Nonhuman agents*

In times of economic uncertainty, the authoritarian nature of God tends to be emphasized, as evidenced by increased attendance at authoritarian churches during the Great Depression (McCann, 1999; Sales, 1972). Further, when people lack a sense of control, they are more likely to defend the legitimacy of governmental and religious institutions, and to justify the (non-egalitarian) status quo (Kay, Whitson, Gaucher, & Galinsky, 2009). We predict that people whose status is threatened would be more likely to conceptualize an all-powerful, commanding, and controlling deity.

On the other hand, people who are high in status are likely to feel in control, perhaps with a corresponding reduced dependency on the divine. Individuals with high status may believe in a distant deity. For example, wealthy, educated, Euro-American males (who have higher social status) are more likely to think of God as being distant and uninvolved in human affairs (Froese & Bader, 2010). This is also consistent with global patterns showing that secular institutions can co-opt the functions of religion in prosperous nations, suggesting that people use social norms rather than an active deity to reap religion's social benefits (Norenzayan, 2013).

### *Religious rituals*

When status motivation is high, we expect at least three types of religious rituals to be practiced with greater frequency. First, status-motivated individuals would more frequently participate in rituals that serve as rites of passage or confer higher status (e.g., Jewish *bar mitzvah*, the Christian sacraments of confirmation or ordination). Second, status motivation may lead individuals to display resources. Large quantities of food may be presented at public feasts (e.g., potlatch), often to signal how much one can afford to lose (Mennell, 1985). In India, Brahman priests at certain holy sites signal their higher status by becoming providers of epicurean delights to pilgrims (Toomey, 1992). Status can also be ritually displayed in fine costumes, prized feathers, gold embellishments, rich robes, etc. Third, an authoritarian, punishing God is thought to demand penance and ritualistic sacrifices from moral transgressors. Those sacrifices are often offered with the help of religious specialists who act as mediators between the laity and the divine, which would serve to perpetuate the hierarchical system. People low in status may also conceptualize a punishing or authoritative God who is testing them; that there is a divine or cosmic plan that justifies their low station; or that the powerful deity will eventually deliver them.

Researchers often find a distinctive pattern of ritual participation among those low in status. Low-status people or groups can demonstrate loyalty to the dominant group by adopting the beliefs and practices of the powerful (Stanley, 1898). Yet disenfranchised, conquered, or marginalized individuals and groups have often adopted the religious beliefs of the dominant group while retaining their own deities, customs, and spiritual traditions, resulting in syncretic forms of religion that blend mainstream doctrines with quotidian practices (Balagangadhara, 1994; Mignolo, 1995/2006). Syncretic religions are often highly expressive. Haitian Vodou, for example, is a highly ritualistic, syncretic religion that exemplifies the fusion of indigenous beliefs and Roman Catholic traditions (Pierre, 1977). Syncretic religions may reflect an implicit strategy to signal loyalty simultaneously to the dominant group and the minority indigenous group, as well as providing emotional release through festival pageantry or ecstatic rituals (Pruyser, 1968).

### *Community structures*

Status motivation would be expected to produce a community structure with a relatively steep social hierarchy (Table 1). The higher status of tribal shaman, priest, bishop, prophet, rabbi, imām, or cult leader (with special learning or novel revelations from a powerful deity) would garner higher esteem in a religious community.

These high-status religious positions often translate into greater mating opportunities, particularly for men (Buss, 2002). Status motivation is especially great for young males, who often go to extreme lengths to compete for status and mating opportunities (Wilson

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& Daly, 1985). This observation could help to predict the shape of religion over the course of men's lives and in different ecologies.

### *Moral order*

We predict that people concerned about status are more likely to endorse punishments for wrongdoers and enforce religious sanctions. For example, this type of response seems to be evident among authoritarians (Altemeyer & Hunsberger, 1992). Values related to power (i.e., achievement, dominance, and the acquisition of resources) would probably be most salient. A focus on religious education, regulations about the preferential treatment or appointment of religious leaders, and the importance of tithes and offerings would be emphasized in the moral codes of hierarchical religious groups in order to maintain the traditional authority structure.

### *Hypotheses*

We hypothesize that status motivation will lead to: (1) belief in an all-powerful, authoritarian God for low-status individuals, or a distant God for high-status individuals; (2) religious rituals that display status, resources, and power (high-status individuals) or ones that are emotionally expressive, syncretic, or mystical (low-status individuals); (3) community structures that have clear demarcations between classes or vertical status hierarchies; and (4) the endorsement of moral codes emphasizing tithes, penitence, divine obedience, and other attitudes and behaviors that maintain the hierarchical system.

Solt, Habel, and Grant (2011) found that religiosity is positively associated with economic disparities. Moreover, our hypotheses regarding nonhuman agents have been somewhat supported by research suggesting that religion provides low-status individuals with comfort and assurance that a higher power is looking after them (Glock, 1964; Scheve & Stasavage, 2006), but also that a high God is willing to punish transgressors or one's oppressor(s) (Roes & Raymond, 2003; Shariff et al., 2009; Swanson, 1968). While more common in more complex societies, such high gods are most present in pastoralist societies, probably due to the unpredictability fostered by diffuse populations and the frequency of combat (Peoples & Marlowe, 2012). At the group level, it is possible to examine the degree to which hierarchical religions emphasize an authoritarian God. Our hypotheses about the display of resources could be tested by examining expenditure on religious events that showcase or improve the status of an individual or the kinship group itself, such as elaborate *bar/bat mitzvahs*.

Additionally, we expect high status to be cast differently among various religious groups. For example, genealogical purity may provide higher status for threatened religious groups (e.g., being a Priest ["*Cohen*"] or Levite among Jews; being a Brahman among Hindus); physical adeptness in hunting, music-making, healing, or dancing may provide higher status for those in harsh or uncertain environments (e.g., being a ritual dancer with favor among nonhuman agents); whereas having material or intellectual wealth may provide higher status for those in ecologies where resources are plentiful (e.g., gaining enlightenment in a Buddhist community or presiding over services in the Vatican). Indeed, Weber (1905/1988) argued that the availability of resources leads to the belief that God prospers the righteous, which both shaped the "Protestant work ethic" and promoted the conveyance of higher status upon those with material wealth.

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### *Mate acquisition and mate retention*

Individual and group differences in mating motives can be understood through the application of life history theory. All organisms must resolve a key set of trade-offs throughout their lives, involving the allocation of limited resources toward physical effort, mating, child rearing, and kin investment (Figueredo et al., 2006). There are individual differences in life history strategies. One individual may have children at an early age or have many children but not spend much energy in parenting those children. Another individual might have few children but invest highly in them.

There are also differences across males and females. Mammalian females and males often have different life history strategies because they have differential parental investment demands. Because females carry the developing young inside their bodies and nurse them after they are born, women are relatively more selective in their choices of mates (Trivers, 1972). Males – whose minimum level of investment in offspring is lower – tend to compete for status in order to garner mating opportunities (Buss, 2002).

Life history strategies also vary systematically in different ecological environments with different affordances. Living in dangerous or unpredictable ecologies can induce "faster" life history strategies, with girls becoming reproductively viable at younger ages. Finally, socio-sexual orientation is defined as whether a person prefers sex in the context of long-term, committed relationships (restricted), or more in the context of short-term, uncommitted liaisons (Simpson & Gangestad, 1991). Faster life history strategies are often associated with an unrestricted socio-sexual orientation, while slower life history strategies are often associated with a restricted socio-sexual orientation.

When people are primed with the motivation to acquire a mate, visual attention and cognitive encoding are enhanced for opposite-sex targets with mating-relevant characteristics, and for same-sex competitors with desirable mating-relevant characteristics (Maner et al., 2003).

### *Beliefs about nonhuman agents*

Many religious traditions have conceptualized the divine in terms of mating (Table 1). In the Hebrew and Christian Bibles, God is portrayed as the husband of Israel and the Church is referred to as a radiant bride (Revelation 21); Hindus revere the god of passionate love, Kama, and his consort, Rati, the goddess of sexual passion (Flood, 1996); and the ancient Romans adored Venus as the goddess of love.

Religious groups often regulate sexual activity, and individuals concerned about adultery and sexual immorality are more likely to profess belief in a God who is judgmental (Froese & Bader, 2010) and a marriage covenant enforcer. Indeed, religion has much to say in regard to mate finding and mate retention – dictating with whom it is acceptable to mate (prohibitions against marrying close kin; arranged marriages), for whom it is acceptable to mate (Catholic priests and nuns must remain celibate), and the goals of mating behavior (producing offspring and/or experiencing pleasure).

### *Religious rituals*

Cultures all over the world have adopted religious ceremonies signaling divine (or social) acceptance of marriage commitments and contracts. We recognize that marriage and mating rituals are not limited to the domain of religion. For example, fertility rites or symbols of fertility are often incorporated in marriage ceremonies (e.g., tossing rice) – a ritual that may have originated in a religious context.

However, there is evidence that practicing religious rituals may strengthen marriages (Li & Cohen, 2013). Fiese and Tomcho (2001) found that marital satisfaction was related to religious holiday rituals beyond a global indication of religiousness. Engaging in religious rituals may also serve the function of reducing extra-pair copulations. Mere reminders of religion (via priming) can lead to increased temptation resistance and less sexual infidelity (Laurin, Kay, & Fitzsimons, 2012; Wolfinger & Wilcox, 2008); and Atkins and Kessel (2008) found that attendance at religious services decreased the likelihood of infidelity.

Participation in marriage and other religious rituals might vary substantially across one's life history. For example, because parental investment theory predicts that men, but not women, can maximize their reproductive potential by having many short-term mates, males with sufficient resources may resist participating in rituals that confirm long-term mating arrangements (i.e., monogamy).

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### *Community structure*

Some religious groups endorse monogamy (e.g., modern Christianity), some endorse polygamy (e.g., ancient Biblical and Koranic traditions, early Mormonism, etc.), and some endorse polyandry (e.g., Tibet). Variations in local ecologies may explain why different religious groups specify such diverse long-term mating arrangements. For example, polygamous mating systems emerge in ecologies with steep social hierarchies, generally rich environments, and occasional famines (Crook & Crook, 1988).

Surprisingly, but predictably from our approach, recent research suggests that people will adjust their religiosity to support their mating goals. Attitudes about mating and sexuality are particularly strong correlates of adult religious attendance, and US rates of religious attendance diminish during peak mate-finding years and then rise when people are settling down and raising children (Weeden, Cohen, & Kenrick, 2008). Religion may help to support a monogamous and highly fertile lifestyle. Also, experimental evidence shows that when the sex ratio is not in one's favor, people are more likely to endorse religious attitudes such as belief in God (Li, Cohen, Weeden, & Kenrick, 2010).

### *Moral order*

The moral concerns and values that religious people endorse should vary according to their mating motivations, which depend on factors such as gender, fertility, and socio-sexual orientation. High testosterone is correlated with increased mate seeking and short-term mating in both males and females, but particularly males in both humans and nonhuman animals (Roney, Mahler, & Maestripieri, 2003). Thus, men might be particularly likely to endorse religious codes that help them obtain mates, allow for more than one mate, but restrict sexual opportunities for others. Individual differences in socio-sexual orientation might also play a role in religious affiliation. People who are sexually unrestricted should be more likely to participate in religious groups that have less stringent rules regarding sex.

The need for paternal certainty on the part of males along with differential parental investment, such that fertile women (ovulating, premenopausal) need to secure a long-term mate, may explain why most religions regulate (usually discourage) premarital sex in some way. Additionally, groups emphasizing genealogical consistency may specify who qualifies as a potential mate (e.g., specific castes in Hinduism, matrilineal descent in Judaism, etc.).

Keeping mates poses a different set of affordances that could shape moral codes regarding mating. Mate retention involves maintaining a moral and social bond with one's partner. Men whose partners are at the fertile phase of the menstrual cycle show robust mate-guarding behaviors (Haselton & Gangestad, 2006) and would be expected to endorse harsh religious sanctions for adultery. Women with high mate value could potentially obtain resources for themselves and their offspring via short-term mating with high-status men. However, women are not as likely to gain genetic benefits by mating with multiple men. Women, more so than men, would be expected to rely upon religion and the marriage dyad to enforce marital commitment.

Finally, men who are highly motivated to mate are more likely to conspicuously consume in order to show off their resources, whereas women are more likely to present themselves as nurturing and caring (Griskevicius et al., 2007). We expect a mating motive to lead religious men to endorse messages of prosperity and to engage in rituals aimed at demonstrating their physical prowess or abundant resources, whereas religious women are expected to engage in religiously encouraged prosocial behaviors, such as caring for others.

*Hypotheses*

We expect mating motives to lead to: (1) mixed concepts of God, as some might renounce belief in a personal God who monitors one's extramarital liaisons; others may conceptualize a deity as a lover; those concerned with mate retention may conceptualize a judgmental being who is unforgiving of sexual sins; (2) participation in fertility, mate seeking, or religiously sanctioned marriage rituals; (3) endorsement of polygamy (men) or monogamy (women); and (4) harsh and punishing attitudes toward adulterers.

At the individual level, the Socio-Sexuality Inventory contains attitudinal and behavioral items concerning the acceptability of sex in committed versus uncommitted relationships (Simpson & Gangestad, 1991). At the population level, we would expect the sex ratio (i.e., the ratio of reproductive-aged women to men) to affect the type of prevalent religions and the degree of religious participation. When the sex ratio is female favorable, sexual promiscuity and divorce rates decrease while marriage rates go up. When the sex ratio is male favorable, the opposite trends are seen (Guttentag & Secord, 1983). Religious variables on the group level (e.g., percentage of people affiliated with religious institutions) could be examined for links with group-level sex ratio. In environments where the sex ratio is female favorable, religions might have strict rules against promiscuity and adultery. In environments where the sex ratio is male favorable, religions should be more likely to endorse polygamy or to excuse male infidelity.

### *Kin care*

Parental care of human offspring is critical to the child's survival, and is an essential goal in the reproductive process. There are at least two broad concerns in parenting: (1) recognizing one's kin; and (2) providing the physical and social resources for the successful growth and development of one's kin. In later life stages, individuals also face the continuing need to care for aging parents, and sometimes extended family.

Bearing children is only the first step toward replicating one's genes and the prepubescent years of a child are fraught with difficulties for parents, requiring protection of the child, the provision of material resources, and the need for socialization. Religious communities often assist in the general transmission of cultural values and are a source of both emotional and social support for parents. Dimensions of religion could relate to kin

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care in many other ways, including conceptualizing a parental deity, instituting rituals that define both genetic and fictive kin, and specifying the moral status of unborn, living, and deceased kin.

There is a fair amount of literature in developmental psychology regarding religious socialization and the religiosity of children. However, there is a paucity of research investigating the role that religion might play in providing emotional and social support for parents. Researchers may ask, for example: do parents of sick children make "deals" with the divine in exchange for healing? What role do rites of passage play for the *parents* of the initiate? Do parents seek more egalitarian religious groups to avoid negative evaluations of their childrearing skills – or do they seek more authoritarian churches to gain social support for strict parenting? How might the moral concerns and values differ for parents with young versus older offspring?

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### *Beliefs about nonhuman agents*

In the absence of empirical studies, our intuition is that females may be especially inclined to seek the benevolent protection of goddesses, maternal ancestral spirits, or saints who are characterized as nurturing and who may serve as role models for successful parenting during childbearing years. For example, in Catholicism, women may look to the Virgin Mary for special understanding and favor. In India, goddesses such as Amma, Santoshi Mata, and Lakshmi are beloved for their compassionate care.

### *Religious rituals*

Religious rituals support kin care motivation in several ways. Religious communities signal acceptance of offspring through initiation rituals (e.g., circumcision, baptism, blessing ceremonies), which indicate that a child has been recognized as a group member.

Religious groups also have much to say regarding the treatment of, and attitudes toward, ancestors. Deceased ancestors (and their physical remains) may continue to be regarded as needing care and respect. Sacred bundles, funerary objects, relics, and gravesites may be carefully maintained and even carried along in migration. Feasts and festivals, such as the Day of the Dead or All Saints Day, are often celebrated – perhaps to ensure that the genetic lineage remains salient to the living. More research is needed to better understand how these religious practices may be activated by kin care motives.

### *Community structures*

Religious group membership may be determined by genetic lineage (religions of descent, like Judaism or Hinduism), but also by assenting to relevant beliefs (religions of assent; Morris, 1996). Sometimes it is possible to "trick" the kinship system into considering non-relatives as kin, and religion may be one such route (Ackerman, Kenrick, & Schaller, 2007), for religious groups often endorse kinship sentiments toward those who are genetically unrelated. For example, Mr. Finnegan, the priest, is addressed as Father Finnegan; and the Bible assures Christians that they are children of God (John 1:12; Romans 8:14). Recent research on prosociality suggests that humans have an evolved caregiving system that may be activated by nurturing and helping others, leading to reduced stress, greater subjective well-being, and better overall health (Brown, Nesse, Vinokur, & Smith, 2003). Representing others in the religious community as "kin" may serve to activate this caregiving system, ultimately conveying health benefits to group members.

*Moral order*

With regard to criteria for religious group membership, the emphasis placed on descent (one is born into the religion) versus assent (one belongs to the religion by virtue of assent to certain beliefs) can have implications for moral concerns and values. For example, when compared to Jews, Protestant Christians are more concerned with immoral thoughts (Cohen & Rozin, 2001) and are more likely to be intrinsically rather than extrinsically religiously oriented (Cohen & Hill, 2007). These may be due to the descent/assent difference between Judaism and Christianity.

Religious groups articulate and monitor the morality of reproductive strategies, typically endorsing pro-natalist norms and advocating the solidarity of families (Norris & Inglehart, 2004; Weeden et al. 2008). For example, Jewish males are obligated to have children – to "be fruitful and multiply" (Genesis 1:28) – while Catholics have generally been forbidden to use artificial means for birth control or to have abortions. Many religious rituals and artifacts implicitly emphasize pro-natalist views by portraying the deity as a child (e.g., Christmas crèche, Jesus Infant of Prague, or young Krishna) or by focusing on rebirth.

Kin care motivations may extend to those beyond the obvious genetic or religious group, leading to the value of universalism and the belief that all humans are related (Reed & Aquino, 2003) or interconnected (Piedmont, 1999). Notions of kinship and kin care have also been extended beyond the confines of human relations (Horton, 1993), even to the extent that God is thought of as a Father or the earth is referred to as Mother Earth.

*Hypotheses*

We expect that kin care motivation will lead to: (1) emphasizing the parental or feminine characteristics of deities or showing special reverence for ancestral spirits; (2) presenting offspring for acceptance in the community through initiation rites or rites of passage; (3) expanding kinship systems to include the dead or members not genetically related; and (4) articulating and defending pro-natalist morals and associated traditional values.

Using World Values Survey data (2009), Norris and Inglehart (2004) showed that religious people and groups worldwide have more children. Fertility rates in secularist nations are falling below the replacement level, while population rates in religious countries have increased by 82% over the last 30 years. In the General Social Survey, Weeden et al. (2008) linked religiosity and mating preferences, but to this date there has been insufficient research regarding the impact of religious beliefs on childrearing practices (cf. Nunn, 1964).

## Conclusion

We have attempted to provide a theoretical framework positing that four dimensions of religion respond, in predictable ways, to differences in fundamental social motives – motives that vary within and between individuals and groups, and which become more or less salient over the course of one's lifetime or in different ecological contexts. We are hoping that our contribution adds to the burgeoning literature on how religious variation can be understood from an evolutionary perspective (Purzycki & Sosis, 2009, 2011).

There are often deeper human universals beneath the surface of cultural variation, and identifying universality versus variation can be complex (Norenzayan & Heine, 2005). For example, Catholics may share the Eucharist whereas Native Americans may participate in dance rituals; however, these diverse practices both serve to promote group

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solidarity. However, we stress that variability should not be discounted even when seemingly diverse behaviors serve some "deeper" underlying function.

### *Causal direction*

One interesting set of questions involves the direction of causality. In this paper, we have discussed two types of causal pathways. The first speaks to the influence of fundamental social motives on various dimensions of religion, which is our main focus (Figure 1). We believe that fundamental social motives evolved to address the threats and opportunities posed by the physical and social environment, and that beliefs about nonhuman agents, ritual practices, community structures, moral concerns and values often change as a result of these motives. Although we can imagine instances where the various dimensions of religion alter the antecedents to fundamental motives (e.g., by reducing or increasing the risk of exposure to disease), or influence the motives themselves (e.g., certain religious rituals may elicit self-protection motives), the focus of this paper and the hypotheses presented herein consider fundamental motives as potent predictors of religious variability.

The second type of causal pathway involves the different facets of religion shown in the final box of Figure 1. We have suggested that beliefs about nonhuman agents may influence ritual practices, with rituals then influencing community structures, and community structures finally influencing moral concerns and values. We recognize, however, that any of these pathways between the different dimensions of religion may be bidirectional and, further, that the causal pathway may even begin with any dimension of religion. For example, when self-protection motives are activated, there is evidence that attendance increases in authoritarian churches. It may be the case that as congregants are exposed to sermons demonizing out-groups, for example, concepts of a punishing God become more salient. *Religious systems are dynamic systems*. Therefore, change along any of the dimensions of religion, as a dynamic system, is likely to initiate change in each of the other dimensions.

Finally, we also wish to reiterate that the fundamental social motives elaborated by Kenrick et al. (2010) are cued by certain situations and particular environments, and vary due to individual differences; yet these motivational states are not always cognitive, conscious, or even capable of articulation. These motives have been shaped by natural selection to shift our attention and direct our behavior to accomplish goals, which ultimately increase our ability to survive and reproduce. Therefore, we do not mean to suggest that individuals or groups knowingly or deliberately manipulate religious systems to accomplish those goals. A wealth of psychological research shows that people are often unaware of the extent to which their own motives may color their thoughts, feelings, and behavior. Although there certainly is a core set of stable beliefs and values in each religious system (e.g., God exists, prayer is efficacious), our claim is that religious systems are highly malleable and susceptible to private interpretation, and that religious experience evolves – sometimes gradually and sometimes more quickly through apostasy or revelation – to satisfy the pressing needs of individuals and groups.

### *Limitations*

Given our broad goal of considering how seven fundamental motives may influence four dimensions of religion, we have not been able to sufficiently explicate any one of these

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motives in sufficient detail. However, these fundamental motives have been discussed extensively elsewhere (Kenrick et al., 2010).

A similar point could be made about the dimensions of religion. Again, due to the broad goal of our paper, we have painted with wide strokes, and have not always fully developed or provided extremely specific explanations or nuanced predictions about how a particular motive might impact a certain dimension of religion. For example, "nonhuman agents" has been used in this paper to refer to the high God of the Abrahamic religions and ancestral spirits. Beliefs about each of these classes of nonhuman agents may be shaped in slightly different ways according to the motivations and needs of individual religious adherents. Rituals, too, can refer both to what is acceptable to eat (e.g., *kashrut* laws and customs in Judaism) and to its polar opposite (fasting), as well as ritual dances – a topic largely unrelated to food consumption. Again, we hope that as other researchers begin to flesh out how each of the specific motives affects each of the specific aspects of religion, more targeted predictions will be made. Although our hypotheses are grounded in previous research, more research is needed to investigate whether these results extend to the domain of religion.

We also wish to temper our own claims and caution future researchers with the recognition that no one theory can explain the whole of religion. If our predictions are at all supported, there will also be exceptions. For example, all people must successfully care for kin, and we have predicted that certain religious beliefs, practices, communities, and moral codes emerge in response to kin care motives. Nevertheless, Catholic priests remain celibate, and Mayan parents sometimes sacrificed their children to the gods. Often the devil is in the details.

By the same token, any dimension of religion is likely to be influenced by several social motivations. For example, a healing ritual might be initiated to avoid disease, yet also serve as a costly signal to reinforce coalitions (e.g., Turner, 1994/1998). In addition, it is likely that fundamental social motives interact in ways that we have not discussed here. Furthermore, there are important motives and psychological needs not included here. Some have argued that Maslow's (1943) uniquely human self-actualization motive should be included in a treatment of human motivations (Kesebir, Graham, & Oishi, 2010; Peterson & Park, 2010). We speculate that individuals who are highly motivated by self-actualization may conceptualize a God within, may be more likely to engage in private meditation and prayer, and may seek religious experience in solitude. Further research would be needed to confirm these tentative hypotheses and, particularly, to identify the antecedents of the self-actualization motive. Additionally, psychologists who study religion often discuss the ways in which religion provides meaning (Park, 2005; Silberman, 2005).

We hope that our model may help to move along the unresolved debate as to whether religion is adaptive or a byproduct of evolutionary processes. We do not mean to resolve that debate here. Instead, we merely seek to broaden the debate by considering a wider view of antecedents, motivations, and dimensions of religion. From our view, a dimension of religion could be either adaptive or a byproduct, depending on the particular dimension, time, person or group, and context that the motive is addressing.

### *Future directions*

We have proposed that fundamental motives can help to explain why individuals and groups vary and why they change in their endorsement of particular religious beliefs, rituals, community structures, and moral order. This is an important question because

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understanding the motives of religious individuals and groups may provide new insights – for example, as to why some people and some groups are more likely to increase in number, to advocate social justice, or to adopt an authoritarian stance.

In future research on individual and group variations in religion, it will be important to carefully clarify how individuals and groups relate to each other. Some people stress how individual minds and cultures are mutually constitutive (Fiske, Kitayama, Markus, & Nisbett, 1998), but others see culture as separate from the individual, and individual psychologies as products of cultures (Schwartz, 2011). Phenomena at the cultural level sometimes do, but often do not, map onto the seemingly same phenomena at the individual level, and both levels of analysis will be important to study (Johnson & Cohen, 2013).

Another important question for future theory and research concerns the mechanisms and time courses by which these effects occur. That is, how does a self-protection motive shape religious dimensions? Are these mechanisms the same for each of the different dimensions of religious experience? We suspect that the mechanisms going from fundamental motives to religious dimensions are going to be different in terms of understanding changes within individuals, differences between individuals, changes within groups, and differences between groups. Likewise, they may very well be different for different motives and dimensions of religion. When it comes to how motives affect chronic differences between individuals, it may be fruitful to identify mechanisms like life history strategy and stable individual differences like sensitivity to threat or chronic perceived vulnerability to disease, which may be due to genetic differences or epigenetic effects. How these factors interact with factors such as biological selection, cultural evolution, and gene-culture coevolution (Boyd & Richerson, 1985; Richerson, Boyd, & Henrich, 2010) is another puzzle.

From another perspective, others may wish to explore how social motivations combine with phylogenetic and ontogenetic processes, where culture is passed down through combinations of linguistic and symbolic information from parent to child, and through children's social imitation (Tomasello, 1999). Other important areas of research could include understanding changes in individuals' motives (as when motives are primed), the temporary cognitive salience of disease threat, mating, or general threats, which probably generate certain styles of cognitive processing and certain hormonal and other physiological changes. Fully thinking through and investigating these and other related questions will be an enormous and complex undertaking requiring the expertise of many, and we have only attempted here to open the discussion.

In short, we recognize that a rigorous and systematic investigation of the hypotheses presented in this paper will require the expertise of scholars from many academic disciplines. We look to those we have cited – and many whom we have not cited here (see, e.g., important contributors in the edited volumes Bulbulia et al. [2008], McNamara [2006], and Schloss & Murray [2009]) – to take up this research.

Finally, all of the possible factors that contribute to religious experience beg the question: is there really any predictability at all in a group or individual's religious experience? Indeed, we agree that it is unlikely that all of the particularities of every individual or group, with regard to each dimension of religion, can ever be completely explained. Clearly, any aspect of religion, whether at the individual or group level, results from a confluence of factors – some arbitrary and some not so arbitrary. Such factors include cognitive constraints, historical trajectories, culturally evolved strategies, and evoked cultural phenomena, among others. We would be surprised if motivations like disease avoidance or coalition formation could fully explain why Muslims and Jews are

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to avoid pork, while Hindus are to avoid beef. Yet, we can propose that religions located in ecologies where diseases are particularly prevalent will be more likely to have food taboos that may help avoid disease (Fessler & Haley, 2006; Fessler & Navarrete, 2003).

We believe that the complexity and varieties of religious experience provide rich opportunities to better understand the human condition, and we hope that our conceptual framework can guide future theoretical and empirical work that will help us understand an important and nearly universal aspect of human experience: religion. We view religion as a kaleidoscope; its many interesting and colorful pieces – beliefs in nonhuman agents, diverse ritual practices, different community structures, and variable intuitions about moral order – are constantly recombined into individual mosaics subject to the viewer's unique combination of social motivations and psychological needs. Much more research is needed to investigate how these basic social motivations and psychological needs may influence the nearly infinite varieties of religious experience.

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## Note

1. We often observe a Western, Protestant bias in the psychology of religion. To reduce this bias, we have included examples in the following sections that have been drawn from multiple religions. Importantly, our anecdotal examples have not been systematically culled from every religion, nor do they constitute evidence for our hypotheses. We merely wish to provide exemplars of the outcomes that we predict, and we invite research that may support or contradict our theory.

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# COMMENTARIES

## Variation and levels of analysis in religion's evolutionary origins

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The target article (p. 3) divides religious variation into four core dimensions, each of which encompasses both individual- and group-level phenomena. It examines these phenomena through the lens of seven "fundamental social motivations," providing evidence that ecological and psychological factors affecting these motivations could connect variation in religions and religious individuals to evolutionary processes. The

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authors broaden the idea of what it would mean for religion to have evolved, and we believe that this is a useful theoretical contribution to the adaptation/byproduct debate.

The major challenge for this all-encompassing framework is that religions and religious individuals are not merely different levels of analysis of the same phenomenon – they are fundamentally different entities. Correspondingly, we would expect different evolved mechanisms to elicit change in each. But the categories of variation and its elicitors in this article collapse across phenomena ranging from individual psychological processes to the effects of chronic ecological conditions on religions themselves. "Self-protection," for example, includes responses to everything from drought to existential uncertainty. The former constitutes an ecological source of variation that might shape actual religious traditions and institutions, whereas the latter is a psychological factor that shapes individual religious attitudes, often in a transient way. Such extreme breadth in what belongs to each category of social motivation threatens the theoretical coherence of the model, as the theory does not treat such psychological/ecological distinctions systematically or explicitly.

The dimensions of religious variation, too, suffer from conceptual vagueness due to their breadth. Rigid social hierarchies that may result from status-seeking motivation fit well with the idea of variation in community structure. But in the self-protection section, the community structure dimension includes increased individual group loyalty and "agreeableness." Are the latter truly a manifestation of variation in community structure? Would these individual psychological constructs reasonably be categorized with the organization of actual social roles in any other context? Across the paper as a whole, the community structure dimension becomes a rather awkward collection of diverse elements, and such extensive internal conceptual variety raises concerns as to whether the authors are broadening these dimensions of variation beyond conceptual coherence simply in order to be able to capture *some* element of each dimension of religious variation under each category of motivation.

A related concern is that the two major elements of the theory's central mechanism – "activation" and "motives" –are applied to both groups and individuals, but are not concretely defined with respect to either. In some cases, it can be reasonably inferred that the "activation" of a motive constitutes an increase in the salience of a particular psychological construct in the consciousness of an individual. Indeed, many of the authors' references regarding the activation of social motives at the individual level are examples of direct cognitive activation of concepts through methods such as priming. But is an individual motive thus construed actually comparable to – or classifiable with – a social "motive" conceived as something belonging to an entire group? When it comes to group characteristics, what is the locus of the motive, and how is it actually being acted upon by selection pressures and ecological circumstances? Take, for example, the Status-Seeking "motivation." It may be that under some circumstances, societies that possess strong vertically arranged social hierarchies are likely to flourish, and thus under those conditions their particular religious practices are more likely to endure. In such a case, the group itself would be the locus of evolutionary change. But does this imply that societies are "motivated" to be hierarchically ordered or highly differentiated with regard to status? It is unclear how a "motive" can be construed as belonging to an entire group, other than as an explicitly stated shared goal, in which case the motive is merely the sum of the motives of the individuals. Is this the manner in which the authors mean to present groups as being responsive to changes in fundamental social motives? If not, what is the mechanism that connects social motives to religious and social groups?

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Though it is not fleshed out explicitly, when it comes to how their interpretation of religious variation bears on the evolution of religion, the authors' argument seems implicitly to consist of two basic premises, and a deduction. The first premise (which occupies the bulk of the paper) is that religions and religiosity vary as an expression of fundamental social motives. The second premise (which appears to be taken essentially for granted) is that those fundamental social motives are themselves a direct product of evolutionary processes. The deduction appears to be that if (1) religious variation is directly elicited by fundamental social motives, and (2) those fundamental social motives were shaped directly by evolution, then (3) we can consider religious variation itself to be explained by evolutionary processes. This presupposes, of course, that religion actually does satisfy these evolved social needs and motives, since if it did not, it is unlikely that it would have become a lasting feature of human cognition and culture. There is plenty of evidence presented that religion does effectively satisfy social motives in ways that could be considered adaptive. But it would benefit the theoretical interpretation of the evidence if this connection were to be laid out explicitly.

As a review of the literature, the article reaps the full benefit of its innovative structure, making manifest many of the central, recurrent themes in the patterns of religious variation and their psychological and ecological elicitors. To that end, the article is extremely informative, but the explanatory power of this approach at a theoretical level is limited by its vague treatment of mechanisms, and lack of attention to the relationship between the psychological and ecological levels of analysis. It is a promising start to an innovative approach that weds evolution and variation, but we expect that when it comes to direct empirical testing, the model will show itself in need of narrower scope and greater specificity.

## Whose society, whose experience? A fundamental question for rethinking religion

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In "Fundamental Social Motives and the Varieties of Religious Experience" Johnson, Li, and Cohen aim to "initiate a discussion about the ways in which religious beliefs, ritual practices, religious communities, and notions of morals and values are responsive to a set of fundamental social motives and basic human needs." In doing so they wish to broaden, not resolve, a "debate as to whether religion is adaptive or a byproduct of evolutionary processes." This is an exciting and important project. In particular, it ought to contribute to a richer dialogue between more psychological and more anthropological or sociological studies of religion. Questions about the evolution of religion and the evolution of (religious) humans are significant in these fields and related ones, such as in cognitive and ethnological studies. Recognizing that "no one theory can explain the whole of religion" is, certainly, important in a study that could otherwise be mistaken for summing up the whole of religion and all social motivations in one neat table.

It is possible to quibble with some of the examples (drawn from multiple religions) used as illustrations in the article. But the authors explicitly state that these can be

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understood differently and are not intended to make the argument, only to "provide exemplars of the [predicted] outcomes." Nonetheless, I propose to question whether the authors have a large enough perspective on sociality in this multi-species planet. Hence my response ponders whose society is energized by the "fundamental social motives" that the article discusses and who has the varied religious experiences that it might explain. My basic question is whether the authors have sufficiently broadened the evolution of religion debate. Let me put this starkly by juxtaposing two statements. Firstly, the beings whose religious experiences the authors appear to want to explain are individuals. Secondly, the debate that they wish to broaden is about evolution, a process that involves species-in-environments.

The idea that it is as individuals that humans engage with religious experience(s) can be illustrated by referring to the way in which the authors hypothesize about some curious social phenomena. They propose, for instance, that people with low social status will believe in more authoritarian deities and participate in more mystical or syncretic rituals than people who are of a higher social status. They also hypothesize that able-bodied and less-able people relate to different kinds of deity and engage with outsiders differently. Since none of these categories of people cut themselves off from other categories to create groups completely unified by status or ability, and since the authors seem to want us to understand the real world better, they must be telling us that within one religious community and within single shared religious events there are people who are doing radically different things. It is of course possible for a hierarchy to busily display their exalted rank while the mass of lower status congregants enjoy rebellious thoughts and subversively friendly ceremonies. Indeed a degree of diversity is observable in many religious groups and events. But presented starkly, as it is here, it is hard to see how the authors' hypothetical religious communities could work since they cannot imagine that *all* able-bodied and therefore aggressive people are kept separate from "more agreeable" collectives of less-able people. Therefore, what really needs explaining is the mechanisms by which such dangerously divided communities and events not only form but even proliferate.

Despite concluding assertions that something has been said about the "motives of religious individuals and groups," the authors have written about highly individualized beings. The experiencing subjects in the authors' hypotheses and scenarios are disaggregated from groups. More, they are a product of a particular cultural imaginary. Bruno Latour (1993) has asserted that "we have never been modern," nonetheless there are immense cultural pressures on us to try to be modern. In particular, these pressures have led us to imagine subjective beings as definitive of humanness and as the proper objects of scholarly attention. The early modern project of creating nation-states required the conversion of people with communal, regional or transnational loyalties and identities into individual citizens. The individualization of voting and taxpaying are obvious facets of this new way of being persons. But religion, as a transnational bond, was a particular challenge to modernizers. It is no accident that we identify an era of "the Wars of Religion" (putatively between Catholics and Protestants) and fail to remember these as "wars of state-making" in which modern assumptions and habits were molded) (Cavanaugh, 1995; King, 2007). Nonetheless, even the strongest exemplar of modern individuated religion, often called "new age," firmly networks and associates "spiritual but not religious" people together (Heelas, 1996; York, 1995). After an extensive history of enculturation into individuality and interiority, all of us can now have rich "inner lives." We have naturalized the dichotomization of private and public (especially as religion versus secularity). However, we are still not individuals in the sense required for

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the authors' hypotheses to be demonstrated in the real world. People identify with and participate in groups that are necessarily diverse. Once again, then, "religious experience" (the evolutionary role of which needs explaining) is not curious non-empirical "beliefs" but social, embodied, emplaced, and performative real-world interactions (Harvey, 2013; Vásquez, 2011).

Finally, just as humans have not evolved as individuals, so we have not evolved in isolation from other species. Put briefly, much of what the authors say about humans seems self-evidently true of at least some other-than-human species. For example, if religion has "much to say in regard to mate finding and mate retention," should we not look again, for example, at the mating and kinship arrangements of our close primate cousins? It is not only humans who participate in "coalition formation" and "protection from disease." In short, a more Darwinian sense of human kinship with other species might greatly enrich this attempt to understand the evolutionary role of religion as well as enabling a more relational sense of what (religious) human persons are.

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## Shifting social motives and religious expression in a globalized world

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In the target article, the authors presented a theoretical model describing how the varieties of religious experience may have evolved due to various fundamental social motives. The model was relatively comprehensive in scope and organized a wide array of religious constructs. Our response focuses on how globalization and its effects on social motives may influence religious expression. First, we posit that for societies with favorable circumstances that generally meet individual needs for safety and community, religious expression may shift toward meeting other types of needs, such as the need for purpose

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and meaning. Second, for societies that have high levels of connection among individuals and groups who are religiously diverse, religious expression will need to balance the benefits of holding strong religious convictions with the need to cooperate in an increasingly connected and pluralistic religious world. This need for balance may result in important changes in the way that religious convictions are held; for example, the importance of holding religious convictions with humility.

## Is religion adaptive? It depends on the context

Research has shown that religion can have both positive and negative effects (for a review, see Bloom, 2012). In a recent study on religion and well-being, Diener, Tay, and Myers (2011) argued that the benefits (or lack thereof) of religion depend on the sociocultural context. Namely, the positive association between religion and well-being was stronger in societies that experienced difficult circumstances, whereas in societies that had favorable circumstances, the association between religion and well-being was negligible. Also, in societies that experienced difficult circumstances, religious individuals reported higher levels of social support than did non-religious individuals, but this difference disappeared in societies that had favorable circumstances. This pattern is consistent with the idea that as certain basic needs for safety and community are met at the individual, group, or societal levels, religious expression may shift.

This finding may have important implications for the theoretical model presented in the target article (Johnson, Li, & Cohen, 2014), as well as for the question of how religious expression may continue to shift in our current globalized environment. Namely, religion may function to meet the social motives that are most strained for the individual, group, and society. For example, the self-protection motive may be more important for societies that experience high levels of unrest and violence; the disease avoidance motive, for societies with poorly developed healthcare systems; and the coalition formation motive, for societies with weak community or civic structures.

As priorities shift in more developed societies that do a good job of meeting individual needs for safety and community, religious expression may likewise shift in order to meet other kinds of motives. For example, one higher-order motive that religion may address is the search for meaning and purpose in life (Frankl, 1963), which can help allay existential concerns (Batson & Stocks, 2004). Religion offers a coherent set of beliefs that not only explicates (1) how to live meaningfully but also (2) what happens to individuals when they die. In both societies with favorable and unfavorable circumstances, religious individuals reported higher levels of meaning and purpose than non-religious individuals (Diener et al., 2011).

The authors' theoretical model suggests that as social needs in a society shift, people's expression of religion will fluidly accommodate those changes. Thus, perhaps as state governments and other secular institutions increasingly meet certain needs for safety or community, the calibration of religious practice will begin to increasingly emphasize motives that are less addressed by these larger institutions, including the need for a sense of meaning and purpose.

In addition to changing religious expressions based on the extent to which a society meets an individual's need for safety and community, a second major shift in our world is increased globalization (Friedman, 2007), which for many individuals, groups, and societies, leads to increased contact and connection with others who are religiously

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different. We posit that this increased interaction with religiously diverse individuals may increase the importance of developing social strategies that enable individuals, groups, and societies to form alliances and engage more peacefully with rivals who not only hold different religious convictions, but also are in direct competition for scarce resources.

We expect that the increased globalization and interconnectedness of societies may require changes in the ways in which religious beliefs, values, and convictions are held. On one hand, there are intrapersonal and group benefits to belonging to a religious group and feeling the certainty that comes from believing that a strongly held set of convictions is true. On the other hand, the increasing globalization and interconnectedness means that the future likely holds even more opportunity for inter-group conflict that is fueled by religious differences. For religion to be adaptive in the future, religious individuals and groups will need to find a way to balance the benefits that come with religious identification with the challenges that come with living in a religiously pluralistic society. One possible shift, for example, may involve an increased focus on humility regarding religious beliefs, values, and convictions, which may lead to increased religious tolerance (Woodruff, Van Tongeren, Davis, McElroy, & Hook, in press).

Religion is a construct that is broad and multi-faceted, and the authors of the target article make a persuasive case for a framework linking social motives to the diverse expressions of religious experience. In this reflection, we have noted two possible shifts in religious expression – movements toward the meaning/purpose benefits of religion and engaging a religiously diverse world with humility – that we believe are likely to occur given important shifts that are occurring in our changing, globalized world.

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## The justice motive as a driver of religious experience

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Johnson, Li, and Cohen have produced a truly important piece of scholarship for those interested in the social and psychological bases of religious belief. Any compelling explanation of religious experience will necessarily need to find the right balance between parsimony and explanatory breadth. It will need to be unified around a central psychological process or model, but not one so broad that it fails to predict the true "varieties" of religious experience. Organizing religious experience as an adaptive cluster of motivated responses to predictable challenges to the fundamental social motivations proposed by Kenrick, Griskevicius, Neuberg, and Schaller (2010) offers an elegant solution to this problem, one that promises to prove useful in organizing the field and inspiring future research.

Here, we would like to discuss a potential driver of religious experience that the authors of the target article did not mention: the human concern for justice. People, across nearly all societies, demonstrate a potent concern for justice. This concern is so very potent, in fact, that it often manifests as justifications rather than actual justice (Lerner, 1980). That is, when justice (however defined) cannot objectively be attained or achieved, people will engage in a number of cognitive biases to at least offer the illusion of justice (Lerner, 1980). Classic demonstrations of victim derogation, in which people blame the victims of misfortune as deserving of their fate, are perhaps the most notable examples of this, but recent research has uncovered a number of ways in which interpretive, attentional, and memory systems distort reality so as to satisfy justice concerns (Jost & Kay, 2010). Very recent research – inspired by classic theory positing an adaptive, developmental basis for justice concerns – has illustrated the importance of justification tendencies for goal pursuit and other forms of self-regulation (Callan, Sutton, Harvey, & Dawtry, 2014; Laurin, Kay, & Fitzsimons, 2012).

How might justice concerns manifest as religious belief or behavior? Below, we describe some possibilities that have been discussed in the literature. It is important to note that we are not trying to cover new ground conceptually or outline a model of the relation between justice concerns and religious experience. Rather, we offer this (admittedly selective) set of examples in the spirit of encouraging the authors of the target article to think about when, how, and why the justice motive may contribute to religious experience and practice, in light of their proposed framework.

Despite the widespread concern with justice, the world is rife with injustice. Virtually every society has some degree of societal inequality, in which members of some groups enjoy easier access to resources and opportunities than members of other groups. Religions offer a variety of metaphysical causal schemas that are perfectly tailored to help people preserve faith in a just world, even in the face of objective injustice. Beliefs in agentic gods that ensure that the good (or wicked) will be rewarded (or punished) in this

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life or the next, or non-agentic spiritual laws akin to karma, are obvious examples. People who act with ill intention will be punished, if not in this life then surely and gravely in the next; those who engage in unrecognized acts of goodness or suffer needlessly will ultimately be compensated. Emerging empirical evidence suggests that religious belief is indeed connected to these forms of ultimate justice reasoning (Callan et al., 2014).

Beliefs in religious forms of metaphysical causality, whether agentic or not, can also help promote feelings that the world operates fairly rather than capriciously or arbitrarily (Kay, Gaucher, Napier, Callan, & Laurin, 2008) and can help people cope with seemingly unjust negative events by offering a causal account that buffers negative reactions (Grey & Wegner, 2010; Park, 2005). In addition, ideologies that espouse suffering and hard work as causally related to meaning in life (e.g., the Protestant work ethic) have been shown to be effective means of finding justice in unexplainable suffering (Anderson, Kay, & Fitzsimons, 2010).

Religious beliefs share the same epistemic, existential, and relational antecedents as other (secular) justifications of societal inequality (Jost et al., 2014), suggesting that the motivation to perceive the world as a fair place is an important underpinning of religious belief. Religiosity is especially high among those who are the most disadvantaged in society (e.g., women and American blacks; Pew Research Center, 2007), and the poorest nations in the world are also the most religious ones (Gallup, 2010). Thus, it is conceivable that religious beliefs are especially attractive to those who are the most vulnerable to (earthly) injustice, who presumably have heightened motivations to perceive justice.

Lerner (1980) argued that the belief in a just world was a "fundamental" delusion because, without it, people could not maintain the idea that they can influence the world in a predictable way. Religiosity – and in particular, the notion of ultimate justice – may thus be critical to the maintenance of subjective well-being, especially for members of disadvantaged groups. Religiosity can offer a justice framework even in the most oppressive systems, where objective justice is absent. Perhaps for this reason, religiosity is associated with increased subjective well-being for both advantaged and disadvantaged members of society (Rankin, Jost, & Wakslak, 2009).

The ambiguous (or malleable) nature of religious tenets may make them particularly well-suited to appeal to both those who are advantaged and disadvantaged in society. For instance, religious ideology was used as a moral justification for perpetuating racial hierarchies and slavery, as well as a palliative creed for those victimized by these same institutions (Frederickson, 2002). Although religious beliefs may bolster subjective well-being, they could also have negative societal consequences insofar as they might quell the psychological discomfort associated with perceiving injustice. This sentiment is consistent with the classic writings of James, Allport, and Rokeach, all of whom grappled with the finding that religious people are more likely than non-religious people to endorse and perpetuate social inequalities. We believe that by considering the justice motive as an (one) underpinning of religiosity, researchers can better explore the varieties of religious experience – as well as its consequences – across diverse factions of society. We are therefore eager to learn where and how Johnson, Li, and Cohen would situate this driver of religious experience within their model.

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## From fundamental motives to religious dimensions: minding the gap

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Johnson, Li, and Cohen offer a model that explains cultural and individual variations in religion as dynamic responses to fundamental evolved motivations. Here, I build on this model by considering the exact nature of the relationship between dimensions of religion and fundamental motives.

My reading of the model suggests at least two different mechanisms connecting religion to fundamental motives. First, religious cognitions and behaviors might directly enhance fitness by helping people meet needs derived from their fundamental motives. For example, religious cleansing rituals might effectively reduce disease proliferation, and conceptualizing gods as nurturing role models might encourage parents to take better care of their children.

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The second mechanism is more in line with Karl Marx and Arnold Ruge's (1844/1976) contention that religion is the opium of the people: religion serves to alleviate concerns associated with a motive, without actually helping fulfill it. Believing in more protective gods may assuage people's anxieties about the threat posed by enemy groups, but it is unlikely to *actually* protect them from attack. Likewise, conducting rituals to appease weather gods may give people confidence that nature is on their side, but these rituals cannot actually prevent natural disasters, nor improve people's ability to cope with them.

Importantly, these latter types of religious cognitions and behaviors may also be adaptive. First, they may help people manage emotions connected to unfulfilled motives. This could contribute to well-being, which predicts health and longevity (Diener & Chan, 2011). Second, they might reduce the anxiety that might otherwise inhibit effective action (e.g., Hardy & Parfitt, 1991; Yerkes & Dodson, 1908). Indeed, prior research suggests that religious cognitions can help people cope with certain anxieties (e.g., Kay, Moscovitch, & Laurin, 2010; Laurin, Kay, & Moscovitch, 2008), and findings cited in the target article indicate that seemingly self-deceptive religious cognitions can aid survival (e.g., believing in a benevolent God can improve disease outcomes; Ironson et al., 2011). Thus, this second category of religious cognitions and behaviors may produce adaptive consequences, but not by directly addressing the need derived from the evolved fundamental motive.

Table 1 delineates how the authors' hypotheses might be categorized according the mechanism linking each religious dimensions to fundamental motives. Hypotheses that do not fit in either category are listed as "other" (e.g., attributing disease to malevolent spirits provides neither real nor psychological protection from disease). The religious behaviors and cognitions associated with these uncategorized hypotheses may or may not be adaptive; but for the purposes of this commentary, I focus on the idea that religion can, on the one hand, help people fulfill the fundamental motives that trigger them, and, on the other hand, quell their anxieties about unfulfilled motives.

Two related questions that emerges from this perspective is: when will a fundamental motive trigger a religious dimension that increases fitness by directly helping people fulfill that motive, and when will it instead trigger a religious dimension that can only indirectly increase fitness by artificially reducing people's concern with the motive? Table 1 suggests one possible answer: a far greater proportion of hypotheses about beliefs and rituals, compared to those about communities and morality, serve the opium function. Thus it may be that beliefs and rituals, compared to community structures and morality, tend to have fewer material effects and more anxiolytic ones.

A more conceptual perspective suggests several alternative possibilities. On the one hand, it may be that when motive-based need is small, religious cognitions and behaviors that allay concerns will suffice. For example, when people feel temporarily lonely, it may be enough for them to communicate with a person-like deity (e.g., Epley, Akalis, Waytz, & Cacioppo, 2008). When the need is strong, though, more effective religious cognitions and behaviors – for example, seeking membership in a supportive, egalitarian religious community – may be required (Diener, Tay, & Myers, 2011).

On the other hand, one might make the exact opposite prediction: that materially effective religious cognitions and behaviors will emerge when the motive-based need can be reasonably met. If a group needs to protect itself from nature, and this need can feasibly be met, then forming a small cohesive community that emphasizes respect, reciprocity, and cooperation following disaster might be most adaptive. If the motive-based need is insurmountable, however – if the group holds no hope of survival following

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Table 1. Tentative categorization of the hypotheses according to the mechanism linking the religious dimension to the fundamental motive.

| | Beliefs | Rituals | Community | Morality |
|---|---|---|---|---|
| Protect from others | | | | |
| *Directly fulfill motive* | *Belief that God endorses violence (justifies own violence)* | *Costly signaling (identify in-group)* | *Enhanced in-group loyalty* | *Complex moral codes to help identify outsiders* |
| | | | *Tendency to gather in religious groups for self-defense* | |
| | | *Rituals that inspire courage* | *Denigration / aggression towards out-groups* | |
| Alleviate concern with motive | Belief that God will provide protection | Prayer and sacrifice to cause divine intervention<br>Exorcisms | – | – |
| Other | Belief in demons as a result of enhanced vigilance | – | – | – |
| Protect from nature | | | | |
| *Directly fulfill motive* | *Respect for natural elements (promotes harmony with nature)* | – | *Small cohesive communities to share useful resources / info* | *Respect and reciprocity (unity and cooperation following disaster)* |
| Alleviate concern with motive | Belief that God will provide protection | Rituals to appease the natural elements | Small cohesive communities that share ineffective ritual knowledge | – |
| Other | Attribute variations in natural elements to capricious Gods[1] | – | – | – |

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Table 1 (*Continued*)

| | Beliefs | Rituals | Community | Morality |
|---|---|---|---|---|
| Protect from disease | | | | |
| *Directly fulfill motive* | – | *Rituals involving washing and separating living from dead*<br>*Rituals that establish connection with the divine (can be healing)* | *Rejection of the sick / dying*<br>*Closed boundaries* | *Moral beliefs about washing and food*<br>*Emphasis on disgust* |
| Alleviate concern with motive | Belief that a benevolent God will ensure good health[2] | Ineffective rituals to heal disease | – | – |
| Other | Attribution of disease to evil spirits / witches[1] | – | – | – |
| Coalition formation | | | | |
| *Directly fulfill motive* | – | *Rituals that expand / strengthen the in-group (e.g., synchrony)* | *Horizontal, egalitarian structures that promote friendship* | *Emphasis on connection to ancestors (fosters collectivism)*<br>*Self as moral (fosters inclusion)* |
| Alleviate concern with motive | Belief in a friendly God<br>Belief in friendly lesser deities | Communication with a person-like deity<br>Meditation | – | – |
| Other | – | – | – | – |
| Status seeking | | | | |
| *Directly fulfill motive* | – | *Rituals that confer status*<br>*Rituals that display status and resources (e.g., hosting feasts)*<br>*Syncretic forms of religion* | – | – |

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Table 1 (*Continued*)

| | Beliefs | Rituals | Community | Morality |
|---|---|---|---|---|
| Alleviate concern with motive | Belief in an authoritarian, controlling God (if low status)<br>Belief in a God who is testing you (if low status)<br>Belief in a distant God (if high status) | – | – | – |
| Other | – | Rituals that perpetuate the hierarchy[3] | Steeply hierarchical communities[3] | Focus on punishment of wrongdoers, religious sanctions, religious education and the appointment of religious leaders (all enforce existing hierarchy)[3] |
| Mate selection / mate retention | | | | |
| *Directly fulfill motive* | – | *Rituals that strengthen marriage* | *Rules about monogamy / polygamy / polyandry* | *Beliefs and values that justify one's own motivations*<br>*Taboos against premarital sex; punishment of adulterers* |
| Alleviate concern with motive | Belief that God regulates sexual activity and punishes adulterers<br>Renunciation of such beliefs if one is oneself an adulterer | – | – | – |

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Table 1 (*Continued*)

| | Beliefs | Rituals | Community | Morality |
|---|---|---|---|---|
| Other | Portrayal of God in mating terms (e.g., Husband of Israel) | – | – | – |
| Kin care | | | | |
| *Directly fulfill motive* | *Belied in caring gods or saints (role models for good parenting)* | – | – | *Morals that favor birth and lasting families* |
| Alleviate concern with motive | – | Rituals that signal acceptance into the group<br>Rituals of respect for dead elders | – | – |
| Other | – | – | Extension of the concept of kin to include every member of the religion[4] | Belief in universalist values<br>Attitudes toward the moral relevance of behavior versus thought |

[1]These beliefs may serve other motives not clearly related to protection; for example, needs for predictability and order (Kay, Gaucher, Napier, Callan, & Laurin, 2008; Webster & Kruglanski, 1994).
[2]This belief may improve actual disease outcomes (Ironson et al., 2011), but its most proximal effect is likely on disease-related anxiety or optimism.
[3]Enforcing the hierarchy does not fulfill status motives, but it can be adaptive: it enables cooperation and coordination in groups (e.g., Van Vugt, Hogan, & Kaiser, 2008).
[4]Treating in-group members as kin does not fulfill kin care motives; perhaps it exploits these motives to (adaptively) promote in-group loyalty and cohesion.

a natural disaster – then believing that God will protect them might allow group members to conduct their business effectively, free from futile anxiety about the possibility of a devastating natural occurrence.

The idea that people take effective action when a goal can be accomplished, but instead use psychological regulatory mechanisms to cope with their feelings when it cannot, fits with existing social psychological research. My colleagues and I recently found that people prepare to actively fight against unpleasant restrictions when these restrictions seem uncertain, but rationalize them – that is, reconstrue them in a way that makes them seem less distressing – when they seem incontrovertible (Laurin, Kay, & Fitzsimons, 2012). Similarly, early work on just-world beliefs showed that people would gladly take an opportunity to rectify an unjust situation, but in the absence of such an opportunity would instead adjust their perceptions to make the victim's harm seem deserved (Lerner, 1980). Finally, some of the authors' own hypotheses support the idea that the relationship between religious dimensions and fundamental motives depends on the chances that the motive can be met. The authors suggest that strong, able-bodied people, who presumably have the capacity to defend themselves against their enemies, will believe in gods who justify that type of violence. By contrast, weak, less able-bodied people will instead believe in a God who will protect them – a belief that should function, like opium, to reduce their distress at the certainty of their defeat.

Understanding the mechanisms by which religious dimensions respond to fundamental motives will be a crucial next step for this promising model. I have proposed two such mechanisms; future research may confirm these or identify others, and may also shed empirical light on the conditions that elicit each one.

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## Domain generality in religious cognition

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### Introduction

Johnson, Li, and Cohen (JLC) bring together a large and varied set of evidence to support a relation between fundamental motives and variation in religiosity. They highlight the ways in which evolved, domain-specific motives may precipitate changes in four dimensions of religion. The authors call for future researchers to investigate the mechanisms by which such motives precipitate religious changes. In this commentary I discuss how domain-general cognitive mechanisms may serve as the gatekeeper for individual-level religious variation.

### Dual process models

Dual process models in the cognitive tradition (e.g., Evans, 2008; Evans & Stanovich, 2013; Kahneman, 2003; Stanovich, 2004) incorporate both domain-specific, modular processes emphasized by evolutionary psychologists (e.g., Cosmides & Tooby, 2013; Gigerenzer, 1996) and domain-general, non-autonomous processes (for an extended discussion, see Stanovich & West, 2003). These domain-general processes are thought to be necessary for executive functioning, problem solving, reasoning, and so on. Dual process theorists often emphasize the importance of domain-general mechanisms in the override of cognitive outputs and behaviors engendered by domain-specific mechanisms (e.g., Stanovich, 2004). Under this formulation, modular processes autonomously cue cognitive outputs that may or may not be altered or overridden prior to affecting behavior. Autonomous processing is referred to as "Type 1", whereas deliberate, working memory-dependent processing is referred to as "Type 2" (Evans & Stanovich, 2013; Thompson, 2013).

### Toward a cognitive mechanistic account of individual religion

The degree to which an evolutionary model that postulates a set of domain-specific mechanisms, such as the fundamental social motives discussed by JL&C, predicts religious cognitions and behavior at an individual level may be related to the degree of instantiation of domain-general mechanisms. There is some evidence for this claim, although it should be noted that the research discussed below is in its infancy and, as a

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consequence, the findings cannot be generalized outside of Western, predominantly Christian societies.

A growing body of research indicates that people who are more willing to engage analytic reasoning when confronted with problems that contain intuitive lures are less likely to hold supernatural religious beliefs (Gervais & Norenzayan, 2012; Pennycook, Cheyne, Barr, Koehler, & Fugelsang, 2014a, 2014b; Pennycook, Cheyne, Koehler, & Fugelsang, 2013; Pennycook, Cheyne, Seli, Koehler, & Fugelsang, 2012; Shenhav, Rand, & Greene, 2012; for a review, see Pennycook, 2014). Moreover, across these studies, this relation holds even after controlling for age, sex, ethnicity, socioeconomic status, income, year in university, university faculty, education (in a non-university sample), political ideology, various personality variables, moral values, and cognitive ability (Pennycook et al., 2014a; Pennycook, Cheyne, Koehler, & Fugelsang, 2013; Pennycook et al., 2012; Shenhav et al., 2012; but see also Razmyar & Reeve, 2013). Religious skeptics also spend more time on reasoning tasks than believers (Pennycook, Cheyne, Koehler, et al., 2013; Pennycook 2014). Finally, experimental evidence indicates that subtle manipulations of intuitive versus reflective thinking modes are sufficient to decrease religious belief (Gervais & Norenzayan, 2012; Shenhav et al., 2012).

Such findings illustrate how domain-general cognitive processes alter beliefs that, as discussed by JLC, are supported by domain-specific processes. Importantly, Type 2 processing need not necessarily undermine Type 1 processing. Indeed, the initial impetus for the distinction between Type 1 and Type 2 processing in the field of reasoning was based on Wason and Evan's (1975) observation that participants gave elaborate and rational-sounding explanations for apparently heuristic responses to the Wason card-sorting task (see also Lucas & Ball, 2005). Consider, for example, the case of increased belief in protective and beneficent nonhuman agents when the cardinal concern is obtaining food, water, and shelter (see target article). Here, the underlying concern for safety from natural events may lead to a rationalized version of a previously capricious or punishing nonhuman agent concept. Evidence for motivated reasoning has been well documented (e.g., Kunda, 1990).

## Beyond belief

The foregoing has focused on religious belief. However, as outlined by JLC, religiosity obviously involves much more than just belief. Thus, it is important to consider the possibility that domain-general reasoning systematically affects certain aspects of ritual, community structure, and moral order at an individual level. This question is largely unexplored and, potentially, a fruitful avenue for future research. Nonetheless, some early and potentially illustrative studies have been published.

One of the studies discussed above, Pennycook et al. (2012), assessed both religious belief and *engagement* (i.e., religious attendance, prayer frequency, and importance of religion for one's everyday life). As predicted by the authors, the association between analytic cognitive style (i.e., the willingness to engage analytic reasoning) and religious engagement was fully mediated by religious belief. This indicates that domain-general reasoning may affect religious engagement, but only insofar as it affects religious belief.

JLC discussed Haidt's (2007) Moral Foundations theory wherein moral values intended to bind groups together are distinguished from moral values focused on the individual. Pennycook et al. (2014b) reported a strong association between domain-general reasoning and moral intuitions such that those higher in cognitive ability

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were less likely to hold "binding" moral values (i.e., values relating to purity/sanctity, respect for authority, and respect for tradition). However, there was no such association for so-called "individualizing" moral values (i.e., values about harm/care and fairness/reciprocity). This pattern of associations held even after controlling for religious belief and participation (both of which were strong independent predictors of binding moral values, consistent with JLC's discussion). This finding illustrates how domain-general mechanisms may differentially affect apparently foundational moral values.

## Conclusion

Much of the religious variation discussed by JLC relates to long-term changes. However, even long-term religious variation must be ultimately rooted in individual-level cognitive mechanisms, particularly if the focus is on evolved tendencies. In this commentary I have provided evidence to support the claim that individual-level religious variation is, to some degree, dependent on domain-general cognitive mechanisms. This, I submit, is a necessary addition to JLC's account of religious variation.

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## Ecology, consensus, and variation: issues with time and persistence in religious systems

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Johnson, Li, and Cohen's (JLC) article exhibits the kind of broad but precise synthesis that is very much needed in the literature. By incorporating psychological motivations, explicit representational models of religious beliefs and behaviors, and features of local contexts, JLC work toward developing testable hypotheses about the evolution of religious *traditions*. Using examples from our field sites, we address three interpenetrating concerns. First, how does the model account for the persistence of religious beliefs? Second, how widespread are the specific religious beliefs detailed in the model predicted to be? Third, when we consider that specific ecological contexts may serve as further predictors for the answers to the first two questions, the model could stand to embrace more dynamism in terms of the proposed causal pathways.

There is considerable evidence suggesting that deeply rooted cognitive faculties and psychological profiles correspond to individuals' religious beliefs (e.g., Norenzayan, Gervais, & Trzesniewski, 2012; Shenhav, Rand, & Greene, 2012; Silton, Flannelly, Galek, & Ellison, 2013; Willard & Norenzayan, 2013). While granting that these beliefs can qualitatively fluctuate within the individual due to various inputs and constraints, JLC remain a little unclear when it comes to the distinction between *synchronic* and *diachronic* patterns of beliefs and behaviors. Indeed, their hypotheses often alternate between the two.

Synchronic beliefs are those expressed at specific points in time (e.g., priming studies, situational contexts) that may or may not diverge with consensus models (e.g., people might claim that God could not hear a bird because of a noisy airplane even though they all might also claim that He is omniscient; see Barrett & Keil, 1996). Diachronic beliefs are those that persist over relatively longer periods of time (i.e., culturally stable religious postulates). Synchronically, various factors trigger fundamental social motives and other faculties, thus temporarily modifying individuals' conceptions of the gods.

To illustrate, take the prediction that "females may be especially inclined to seek the benevolent protection of goddesses, maternal ancestral spirits, or saints who are

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characterized as nurturing … during childbearing years." In this case, pregnancy may trigger beliefs and behaviors that correspond to the underlying social motivations of child care. Presumably, individuals who are *not* pregnant are *less* inclined to exhibit such beliefs and behaviors. Compare this to one ethnographic case where some Papua New Guinean groups explained a flood supernaturally, but with curious underlying motivations. Some Ganjiga claimed that "sorcerers from the Uiaku side of the river … in retaliation for a long-standing feud" caused the flood whereas some Uiaku claimed that the Ganjiga "had annoyed other villages by making gardens on disputed land … or perhaps God had sent the flood to punish Ganjiga people for lax church attendance" (Barker, 2008, p. 122). The social motivations underlying these synchronic beliefs are fairly obvious.

However, how can JLC's model account for when and where there is little variation across individuals? And what about beliefs that persist over longer periods of time? According to JLC, the forces behind these beliefs are social motivations and therefore suggest that cultural models exist by virtue of perpetually engaged social motivations. Do beliefs in "maternal ancestral spirits" persist beyond motherhood because of the ubiquity and persistence of childrearing and its concomitant motivations? We find this to be unlikely given the fact that there are often high levels of consensus that persist over long periods of time and show relatively less variation.

JLC predict that a certain suite of fundamental motivations underlying religious beliefs correspond to specific kinds of religious rituals. However, when we attend to where consensus lies in any given population, things become a little less straightforward (see Fernandez, 1965). By way of illustration, in the Tyva Republic, Purzycki found that out of a sample of 82 individuals, people's conceptions of local spirit-masters ranged from creations of nature ($n$ = 32; 39%) and spirits of ancestors ($n$ = 25; 30.5%), to *creators* of nature ($n$ = 15; 18.3%); and 10 (12.2%) reported "other" without providing an answer (Purzycki, 2012, pp. 238–239). According to JLC, the underlying social motivations driving such beliefs would include self-protection of natural threats (as these gods provide, protect, and correspond to natural entities), as well as kin care (for those who conceive of these spirits as ancestral). Spirit-masters consistently correspond to ritual practices at designated cairns placed on territorial borders and natural resources (e.g., trees and lakes). These, in turn, possibly correspond to specific coordination problems of territory and resource access associated with pastoralism (Purzycki, 2013). The rationale for these rites corresponds well to JLC's prediction of fertility rituals and thanks offerings, but *not* those associated with kin care (e.g., circumcision, baptism, and initiations). What this suggests is that we might find relatively *less* variation in facets of religious traditions that address local problems and *more* variation when there are no pressures for consistency. As such, ecology may predict ritual expression better than the specific social motivations as detailed by JLC, thus leaving open a range of possible beliefs about spirits. If this is the case, it would suggest a causal relationship in the opposite proposed direction; ecological problems predict ritual form, which may leave open a range of beliefs that do not consistently or necessarily correspond to the same social motivations.

The portrait is further complicated when we consider the ancestor spirits (*Kalou-vu*) of Fiji who represent a case of how beliefs about supernatural agents can correspond to *multiple* social motivations. The *Kalou-vu* are the mythical ancestors – or roots (vu) – of a clan. This kinship link gives them influence over their progeny along clan lineage. The ancestor spirits thus correspond to the highly structured, kin-based social hierarchy that forms the backbone of traditional Fijian political systems. These root ancestor spirits exert their power through spiritual forces that bring illness and disaster, as well as healing and good fortune. Their punishments in particular come in the form of spiritual attack levied

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against those who fail to live according to the principles of a good, traditional Fijian life (Hocart, 1912; Katz, 1999; Thomson, 1895). Fijians define this good life by the humility and responsibility to others that can help sustain the traditional kin-based political system (Brison, 2001; Torren, 1990). Those who fail in these duties open themselves up to spiritual attack. Thus, Fijian ancestor spirits evoke (1) coalitional concerns, (2) kin care concerns, and (3) protection from both ecological and pathogen disasters. However, JLC do not provide a clear means of determining how these multiple facets might interact to create such a belief system.

While acknowledging that some things may be bi-directional, JLC adopt the common view that "beliefs … give rise to religious rituals" with the additional component of underlying social motivations that "give rise" to beliefs. While this may be the case for synchronic beliefs, diachronically, problems of consensus and persistence suggest that we have to take into consideration the possibility that ecological problems "give rise" to the varieties of religious experience (Purzycki & Sosis, 2013; Shariff, Purzycki, & Sosis, 2014) and that beliefs quite often correspond to local concerns. What stabilizes beliefs and behaviors over relatively long periods of time are the persistence and force of those problems. While social motivations may underlie beliefs, variation in individual motivations is more likely to lead people to the same religious conclusions.

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## The varieties of religious predictions

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Johnson, Li, and Cohen set out as their central thesis that "evolutionary theory can account for cultural variability in religion." They present this as an apparent corrective to an overemphasis in evolutionary accounts of religion on universals underlying the varieties of religious expressions. However, it seems clear – and indeed, is attested to by the considerable body of research they cite – that the very purpose of evolutionary accounts is to do just what they propose, that is, provide an account of religious diversity grounded in evolutionary theory. The authors, then, are not introducing a novel focus for further research. The value of their work comes through their ambition to provide an "integrative theory" of religious change and variation that may yield testable predictions. This would be a significant contribution. The growing body of research into religion is providing us with powerful and unique insights into the nature of religious experience, both as an individual and a social force. It is subject, however, to the same criticisms leveled at other attempts to ground human behavior in an evolutionary context: that such attempts are just-so stories, constructed post hoc (if not ad hoc) and passed off as science. Such criticisms often appear to be unacquainted with the extensive research literature behind evolutionary theories of religion, yet these challenges need to be answered. Developing a systematic framework, such as that presented here, is an important step toward not only furthering this field of research, but toward legitimizing its status as a science of religion. The question is, is this the right framework? The only way, ultimately, to answer that question, whether in regard to this or any alternative framework, is to put it to work and see what it yields. However, before committing to such intensive effort, we need to determine if there are sound reasons to be confident that the proposed framework may prove productive. And that is really the question before us now – have the authors made the case that Fundamental Social Motive theory can be the source for an integrative theory of religious variation and change?

In answering this question I look to two issues: (1) is the proposed framework well-grounded in a reliable theory of human behavior, and (2) can the framework be used to generate reasonable and specific predictions about religion? On the first issue, I think the authors are successful. Fundamental Social Motives theory offers an evolution-based framework for making sense of human behavior that does justice to the complexities, and

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the plain messiness, that characterize human actions, avoiding the overly reductionistic tendencies of certain evolutionary takes on behavior. In conjunction with the four dimensions of religion that the authors highlight, this provides us with a framework for bringing some coherence to the dizzying variations in religious traditions. The four dimensions of religion that they chose as part of their framework will be open to criticism from some quarters, particularly religious studies scholars not inclined to biological approaches to religion. However, these four dimensions are valid representations of the structure of religions as that is being revealed by evolutionary and cognitive approaches, and as such, in conjunction with Fundamental Social Motives theory, makes for a theoretically sound framework for future research.

This then leads us to the productive potential of this framework, and here the target article turns problematic: specifically in regard to its hypotheses and predictions. While some predictions seem promising, several seem so intuitive as to be of questionable experimental worth (e.g., that under disease threat "cleansing and healing rituals will proliferate"), others seem more a summary of what has been established and repackaged as prediction (i.e., this is what has been found and so we predict this is what will be found, e.g., in relation to kin care), and still others, just vague (e.g., the predicted relationship between coalition formation and benevolent gods: clearly, the type of coalition being formed will matter to the characteristics of the gods conceived; and even if benevolence toward the group is a vital aspect of the deity, so too is antipathy toward the out-group). This is not to suggest that there are not useful predictions provided, but the overall impression is that the authors are casting their theoretical nets too indiscriminately.

Their discussion is also unclear as to whether the predicted change/variation is to be expected at the individual level, the group level, or both. Also, in determining the salient social motive, is it the motive of the group or the individual that is at play? It seems that the proposed framework can be applied at both levels – and that is a real strength – but failure to make this clear weakens the value of the article's hypotheses.

These problems stem from a design flaw in the authors' approach to explicating their theory. There is not, and cannot be, a one-to-one connection between any particular social motive and a specific effect in any particular dimension of religion. This is because social motives do not operate in a vacuum but play out in distinct sociocultural environments; environments that themselves are shaped by existing religious practices, and that shape the contours of social motives. The authors recognize this, of course, and in their conclusion address numerous confounding factors that may undermine their predictions, thus anticipating such criticisms. However, they go to such lengths to qualify what their model can hope to accomplish – going so far as to question whether there is any predictability in regard to religious experience – that it raises the question of just what they are willing to claim for their theory. Here, intellectual humility (an underappreciated virtue) goes too far. Yes, no one model can explain all of religion (but what serious researcher would make this claim?) and the depths of a phenomenon as complex and personal as religion can never be fully plumbed, but there are responsible and useful methods to bring some order to this experiential chaos.

Indeed, the integrative theory that the authors propose may itself be just such a method. A more focused and concrete explication of the framework, a few choice examples discussed in richer detail, would have made a more compelling argument for it, and may have provided a more concrete set of predictions to test. They state that this was not their purpose, and that they needed to paint in admittedly broad strokes, leaving to future researchers the task of fleshing out the complex interactions. But since the devil is

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in the details, as they point out, it is that future work of integrating these details that will ultimately speak to the usefulness of this framework as an experimental paradigm. I am optimistic about this approach, but the question is still very much an open one.

## Levels of religiosity and moral motives

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Johnson, Li, and Cohen (JLC) present an ambitious framework, proposing that four dimensions of religion meet seven fundamental social motives in different ways. We focus our commentary on two issues: how these motives may not only influence the expression of religion but also varying levels of religiosity between people and over time, and how a recent model of moral motives relates to the framework.

The target article emphasizes the variability of religious belief and practice, and the different forms that religiosity takes as a function of social motives, but it neglects how the motives may clarify the decline or absence of religiosity. This neglect is worth redressing because the fundamental motives affect all individuals regardless of their levels of religiosity, and the strength of these motives may have changed over historical time in ways that parallel reductions in religious belief.

In addition to the dimensions of qualitative variation in religion laid out in Table 1, we might add a "Level of religiosity" column outlining how the motives are associated with quantitative variation in religious belief and observance. For example, the motive for optimal mating strategies may drive some to neglect purity-based religious mating regulations in order to maximize their mating opportunities. This could result in high levels of attrition by followers unable or unwilling to adhere to centuries-old ideas of chastity. It is also possible that higher levels of certain motives are associated with low levels of religiosity cross-sectionally; for example, individuals who are highly motivated to seek status (climb the corporate ladder) or to find and attract as many mates as possible may tend to show lower levels of religious belief and participation.

We suspect that many of the social motives identified by JLC may help to understand the widespread reduction in religiosity. People living in times and places where human, natural, and pathogen-related threats have been minimized by technological and social advances, and where needs for fulfilling relationships (within alliances, hierarchies, mate pairs, and kinship groups) have been increasingly met within functioning social systems (e.g., advanced social democracies), may experience lower needs for religious expression. The target article does an excellent job of showing that the dimensions of religion are influenced by social motives, but its analysis could be extended to account for variations in overall religiosity in a way that sheds light on the historical trend away from religiosity in some parts of the world.

Our second point concerns the moral order dimension of religion. We argue that a particular theory of morality – the Model of Moral Motives (MMM; Janoff-Bulman & Carnes, 2013) – should guide hypothesis formation *within* the moral order dimension of

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religion. The focus of the MMM is on a fundamental distinction in motivation that JLC omits: approach versus avoidance. When these motivations are applied to the moral domain, they distinguish between prescriptive (what we *should* do) and proscriptive (what we should *not* do) morality.

JLC aim to provide a framework that captures the *complexity and variety* observed in religious experiences, so it is not surprising that their suggested hypotheses vary across the social motives. However, the MMM provides a structured approach to morality more broadly, and can be used to guide hypothesis development within the moral order domain. This has the benefit of demonstrating how morality functions *across* the social motives, rather than in relation to each social motive in isolation.

Some of the hypotheses proposed by JLC relate to proscriptive morality, whereas others relate to prescriptive morality. For example, the restrictive moral codes proposed to be driven by the motive for self-protection from humans, which "reinforce[s] group solidarity and keep[s] the group separate from outgroups," involve proscriptive morality. On the other hand, the hypotheses about reciprocity laws (self-protection from natural events) relate to prescriptive morality.

Ensuring that both proscriptive and prescriptive morality is addressed for each social motive would provide a more complete picture of moral order as it relates to religion. For example, JLC suggest that moral concerns about harm and care (Haidt, 2007) may be especially active under the motivation of coalition formation, and thus lead to "cooperative and care-giving behaviors." They note that this contrasts with their "predictions of exclusivity and aggression resulting from self-protection motivations."

This contrast clearly implicates the MMM's approach/avoidance distinction. Cooperation and caregiving represent a *pre*scriptive morality, while "predictions of exclusivity and aggression" result from moral proscriptions. However, a proscriptive morality driven by the coalition formation hypothesis could lead to an emphasis on conformity, group loyalty, and authority, and a prescriptive self-protection (interpersonal) morality could involve reciprocity and care for others' well-being (Janoff-Bulman & Carnes, 2013).

Although the approach/avoidance (prescriptive/proscriptive) distinction may add more hypotheses to an already extensive set proposed by JLC, the MMM provides coherence and simplicity to the moral order dimension. Rather than investigating the relationship between each social motive and morality in isolation, researchers can investigate morality *across* the social motives. For example, the MMM suggests that purity concerns provide the base for a broad proscriptive morality. Thus we can speculate that there may be proscriptions on what you may not eat (disease avoidance), who you may not have sex with (mating motive), who you may not marry (marital regulations), and who you should not mix with (status seeking and coalition formation) – all tied up to the moral force of proscriptive purity concerns.

Just as the fundamental social motives themselves relate to each other and form complementary parts of a coherent theory, so employing the MMM across these social motives will enable a cohesive investigation into the moral order dimension of religion.

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## RESPONSE

# Response to commentaries: a variety of questions about fundamental motives and religious experience

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In our target article, we proposed that evolved, fundamental motives (self-protection, disease avoidance, coalition formation, status seeking, mating and mate retention, and kin care) could affect four dimensions of religion (beliefs about nonhuman agents, religious rituals, community structures, and moral concerns and values) for individuals and groups. We are grateful for the opportunity provided by the commentaries to think more deeply about our perspective. In our reply, we address questions about fundamental motives and religion as an adaptation or byproduct; the fundamental motives and religion of individuals and groups; and ways in which our thinking is incomplete, necessitating further theory development and research.

### Does religion actually solve fundamental problems?

In our target article, we were purposely silent on the important question of whether religion is an adaptation or a byproduct, and the related issue of whether religion actually solves the problems raised by a motive. Does religion actually protect us from harm, or disease, or help us find mates, in ways that increase our reproductive success? Behaviors that may have been adaptive in the past (e.g., not eating pork) may no longer serve a functional purpose in the current environment. Beall and Graham posited that if fundamental motives evolved, and religion changes according to fundamental motives, then satisfying some motives "could be considered adaptive" and can be seen as an evolved product – since "there is plenty of evidence presented that religion does effectively satisfy social motives in ways that could be considered adaptive." This comment is echoed by Laurin and also by Purzycki and McNamara, who consider the question of why religion persists.

We have argued that fundamental social motives are activated, in part, due to affordances in the environment, and that motives then lead to changes in the four religious dimensions. Laurin asserts that religion might enhance fitness by either directly solving problems (e.g., religious cleansing rituals might reduce disease), or by alleviating the concerns that are associated with a fundamental motive. Even if religion might not actually directly fulfill the motive, such reductions in anxiety or stress might then be adaptive because they increase the likelihood that one will be able to take care of themselves or their offspring. Laurin further proposes that beliefs and rituals, more than communities and morality, might serve this anxiolytic function, when the need is small. We agree with much of Laurin's theorizing, but further propose that community structure may help to alleviate stress via social support.

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The question of whether religion can be adaptive by indirectly enhancing fitness needs further research, but the idea that it helps to form action groups when the goal can be accomplished and alleviates stress if the problem cannot be solved is indeed an interesting one. One must be cautious, however, when considering whether "feeling good" is adaptive. There might sometimes be a survival risk to alleviating concerns for problems that still exist. Convincing yourself not to be stressed by potential predator attacks may make you more vulnerable to actual predator attacks. This does not mean that people do not receive health benefits from reducing concerns or stress, but it is difficult to know at what point alleviating stress is no longer beneficial.

A further element to the question of whether religion is adaptive was raised by Haslam, Watkins, and Wheeler, who asked why there is a decline or absence of religiosity if religion might be so useful for solving ecological and social problems. We suggest two main reasons for this. First, we do not mean to imply that religion is the only institution that can satisfy or reflect fundamental goals. Culture, government, and other social groups provide some of the same benefits as religion (e.g., a sense of control), and it has been suggested that people often fulfill their needs via these other social institutions (Kay, Whitson, Gaucher, & Galinsky, 2009). A second, more controversial hypothesis may be that ecology-specific changes in mating motivations may account for the decline in religiosity since most religious groups endorse sexual restrictedness (Li & Cohen, 2013).

We would, however, caution not to mistake certain changes in the character of religion for a decline (such as a shift from an anthropomorphic God representation to a more abstract or cosmic God representation), or a decline in belief as being isomorphic with a decline in religion – we proposed multiple dimensions of religion in our paper, and further, not all religions emphasize beliefs or practices in the same ways (Cohen, Siegel, & Rozin, 2003). Nevertheless, there is certainly more work to be done in applying the framework to explain the historical trend away from religiosity in some parts of the world.

## Individual versus group religious experience

Several commentators have pointed to potential differences in how fundamental motives affect individuals' versus groups' religion. Certainly, religious *individuals* are fundamentally different than religious *groups*, raising the possibility that different processes or even different outcomes could apply.

Indeed, we did discuss how fundamental motives can differ within and between individuals (driven by individuals' psychological processes), and between groups (driven, for example, by ecological conditions). It is certainly a fair question, as Beall and Graham ask, whether it is even really appropriate to speak of groups as having motivations. The fundamental motives framework, as developed by Kenrick and colleagues (see Kenrick, Griskevicius, Neuberg, & Schaller, 2010), is most often applied at the individual level of analysis. It may be that our thinking and our model are more apt regarding how fundamental social motives affect the religion of individuals rather than of groups. Nevertheless, it is often fruitful to consider phenomena at the group level as well as at the individual level of analysis, as when White et al. (2012) considered how threat at the national level (countries' military expenditures), at the individual level (individual differences in threat sensitivity), and even when induced via experimental priming, related to agreeableness (again characterized at both the group and individual levels of analysis). As another example, biologists often study behavior at the population level because, while each group consists of individuals, ecological considerations such as food

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dispersion can affect the degree to which the group as a whole can be defined as cooperative, promiscuous, or aggressive. For example, Noël, Grant, and Carrigan (2005) found that frequency of competitive aggression in groups of cichlids was highest at intermediate levels of the spatial clumping of resources.

Harvey goes even further, and questions how individuals within groups, doing different things, and having different (perhaps competing) motives, stay bound together. Humans are intensely social and must live in groups in order to thrive, even as members within a group pursue different goals. Different motives within the group may lead other members of the group to be perceived as threats, but also as opportunities (for mating, etc.; see Neuberg, Kenrick, & Schaller, 2010). Simply put, the good of being bound to a group often outweighs the bad.

This is related to the comments offered by Kay and Napier, who asked where fairness and justice might figure in our framework. Fairness and justice surely become important as people in groups are pursuing different goals and these must be reconciled if groups are to function effectively. Religion may be an especially important element in promoting in-group cooperation (Norenzayan, 2013; Wilson, 2002) and alleviating in-group conflict (Roes & Raymond, 2003). In terms of the fundamental motives framework, then, justice and fairness can contribute to solving problems related to coalition formation and maintenance.

What constitutes fairness and justice is not always clear, however. For example, Haidt (2013) points out that whereas a redistribution of wealth (e.g., through taxation) seems fair and just to some, others may see such programs as an unfair threat to their hard-earned resources. We have argued that when people feel threatened, they are more likely to demonize threatening others and to believe in a high moralizing God who will punish evil.

In short, moral concerns regarding fairness and justice can be complex. Such concerns might contribute rather directly to cooperation and fitness for some, may provide the justification for conflict and aggression for others, but also might simply provide a psychological benefit (e.g., believing that an evil person or persons will be punished in the afterlife), again coming back to Laurin's insight that psychological benefits of addressing these motives could be helpful.

## Opportunities for future theory and research

We are certainly aware that our target article does not provide a completely satisfactory, and fully fleshed out theory of the influences of fundamental motives on religious experiences. Commentators noted that some of our hypotheses were too intuitive, a few have already been examined, and still others are perhaps too vague at this stage. We agree. Readers may want more, and indeed we want more. Our goal was to articulate one way (via a fundamental motives framework) to think about how aspects of religion could vary in evolutionarily predictable ways, and to propose some *a priori*, testable hypotheses. We strove for a balance between providing novel hypotheses and providing existing evidence in support of our theory. As our primary goal was to provoke future theory and research on evolution and religion, we hope that both our more intuitive and less intuitive predictions will be tested and retested. Further, an evolutionary perspective can help explain *why* phenomena exist from an ultimate level of explanation (Tinbergen, 1963), so sometimes even well-established findings can still benefit from evolutionary theory and investigation. Often what seems intuitive to an evolutionary psychologist may baffle a proximate-level researcher.

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One aspect of our theory that could bear more scrutiny is in regard to causal directions. Purzycki and McNamara point out, for example, that ecology may predict ritual expressions that, in turn, may activate specific social motivations. Further research is also needed to understand how the different motives and dimensions of religious experience might interact.

One of our major contributions, we hope, is to move away from the tendency in research in evolution and religion to look at religion as monolithic. Our perspective is that evolutionary theory can provide a useful framework for explaining religious variability. Through the integrative fundamental motives framework, we hope to inspire a more nuanced view of religion across disciplines, and we are pleased to see that we have already sparked new research ideas.

For example, we appreciate Purzycki and McNamara's fieldwork examples. This is the kind of research that we are hoping to inspire – that anthropologists will take these ideas and test them in small, indigenous communities. We certainly want to avoid a Western, Educated, Industrialized, Rich, and Democratic (WEIRD-dominated; see Henrich, Heine, & Norenzayan, 2010) theory of fundamental motives and their impact on religious experience, which, as we have tried to illustrate, can be so rich and multidimensional.

Another important direction for future theory and work is in reconciling the domain-specific fundamental motives approach with more domain-general approaches, as discussed by Pennycook, who argues that domain-general cognitive processes may alter beliefs that are supported by domain-specific processes. Haslam, Watkins, and Wheeler believe that our discussion of morality can be expanded to take into account the Model of Moral Motives, which focuses on approach and avoidance (what we should and should not do). This perspective would serve to enrich our understanding of how each motive may lead to both prescriptive and proscriptive moral imperatives, linking our discussion to more general approaches to moral thinking.

An additional wrinkle on the question of generality and specificity concerns globalization, wherein Hook, Davis, and Van Tongeren suggest that religious expression may activate "higher" needs. Once people feel safe, have plentiful resources, and have mates and children, individuals might turn toward a focus on meaning in life and self-transcendent values (e.g., Fredrickson, 2001; Kesebir, Graham, & Oishi, 2010). Hook et al. suggests that these goals may have important downstream consequences in terms of rituals, communities, morals, and value priorities as individuals interact more frequently with out-groups. It is possible that in religiously diverse societies, balancing religious convictions with the need to cooperate may make character traits such as humility important, and such traits may help to reduce inter-group conflict. This is the type of theoretically derived hypothesis that we hope will be tested in the near future.

## Conclusion

We have provided some testable hypotheses in the target article, and we believe one of the strengths of the fundamental motives perspective is that it is broad enough to be applied and investigated across disciplines. As Teehan points out, the field needs a systematic framework for integrating evolutionary theory and the psychology of religion to move forward with a more systematic program of scientific research. The framework that we propose is, we believe, well-grounded in extant theories of human behavior and will allow us to begin to make sense of the dizzying array of religious traditions. The utility of the framework we present here remains to be tested, but we are hopeful that

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others will find inspiration in thinking about how fundamental social motivations may impact the varieties of religious experience.

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