19

Religious Prosociality

A Synthesis

Ara Norenzayan, Joseph Henrich,
and Edward Slingerland

Abstract

Religion is a ubiquitous aspect of human culture, yet until recently, relatively little
was known about its natural origins and effects on human minds and societies. This is
changing, as scientific interest in religion is on the rise. Debates about the evolutionary
origins and functions of religion, including its origins in genetic and cultural evolution,
hinge on a set of empirical claims about religious prosociality: whether, and through
which particular pathways, certain religious beliefs and practices encourage prosocial
behaviors. Here we synthesize and evaluate the scientific literature on religious proso-
ciality, highlighting both gaps and open questions. Converging evidence from several
fields suggests a nuanced pattern such that some religious beliefs and practices, un-
der specific sociohistorical contexts, foster prosocial behaviors among strangers. This
emerging picture is beginning to reveal the psychological mechanisms underlying reli-
gious prosociality. Further progress will depend on resolving outstanding puzzles, such
as whether religious prosociality exists in small-scale societies, the extent to which it
is constrained by in-group boundaries, and the psychology underlying various forms
of disbelief.

Introduction

It has long been argued that religion facilitates acts which benefit others at a per-
sonal cost, a hypothesis that can be termed religious prosociality (Norenzayan
and Shariff 2008). This idea has a long history in the social sciences (e.g.,
Durkheim 1915/1965; Wilson 2002; Darwin 1859) and has returned to center
stage in recent debates about the evolutionary origins of religions (Bulbulia et
al. 2008; Norenzayan and Shariff 2008; Atran and Henrich 2010). These debates
revolve around (a) whether religion arose as a cognitive by-product of evolved
cognitive biases (e.g., Boyer 2001, 2008; Barrett 2004; Lawson and McCauley

1990; Atran and Norenzayan 2004) or (b) whether religion (or some parts of it) is a genetic adaptation for cooperation either at the individual level (e.g., Bering 2006b, 2011; Johnson 2009; Sosis and Alcorta 2003; Schloss and Murray 2011) or through a process of multilevel selection (Wilson 2002). A third alternative synthesizes the cognitive by-product approach with cultural evolutionary theory (e.g., Richerson and Boyd 2005). In this view, a suite of cognitive biases lead to intuitions that support religious beliefs. Some cultural variants of these beliefs are then harnessed by cultural evolution and intergroup cultural competition to enable large-scale cooperation (Norenzayan 2013; Norenzayan and Shariff 2008; Norenzayan and Gervais 2012; Atran and Henrich 2010; Henrich 2009a; Slingerland et al., this volume; see also Wilson 2007a).

Progress on these debates critically depends on a number of empirical claims about whether, and through which specific pathways, religious beliefs and practices encourage prosociality. In surveying the evidence, we do not need, and do not offer, a strict definition of religion in terms of necessary and sufficient features, as religion is best seen as a family resemblance construct that consists of various converging elements (see, e.g., Atran and Norenzayan 2004; Boyer 2001). As in any other scientific enterprise, we think that an outline of the features of what is labeled "religion" cannot be decided a priori but emerges out of years of rigorous empirical and theoretical research. The theoretical claims and debates about the origins of religion are addressed elsewhere (Slingerland et al., this volume). In this chapter, we offer a nonexhaustive synthesis of the key aspects of the growing empirical literature for which competing (though not necessarily incompatible) evolutionary theories must account. We offer some conclusions, point to some apparent inconsistencies and possible resolutions, debate methodological challenges, and highlight outstanding questions for future research.

Surveys of Religiosity and Self-Reported Charitability

One of the earliest empirical works that links religion to prosocial behavior comes from sociology. A long line of survey findings conducted in the United States and elsewhere suggest that those who frequently pray and attend religious services (Christians and Jews of various denominations, as well as Muslims and Hindus) reliably report more prosocial behavior, such as more charitable donations and volunteerism (Brooks 2006). Brooks reports, for example, that 91% of religious people (defined as those who attend religious services weekly or more often) report donating money to charities, compared to only 66% secularists (defined as those who attend religious services a few times a year or less or those who declare no religious affiliation). The results for volunteering time are 67% (for religious people) versus 44% (for secularists). This "charity gap" is consistent across surveys and remains after statistically controlling for income disparities, political conservatism, marital status,

education level, age, and gender. Some commentators cite these findings as evidence that religious people are more prosocial than nonreligious individuals (Brooks 2006).

There are, however, several limitations to these findings. One unresolved issue is whether this charity gap persists beyond the in-group boundaries of the religious groups (Monsma 2007). Another is the extent to which this finding generalizes to more secularized societies with stronger social safety nets, where governments have usurped the traditionally strong social functions of religious charities (Norris and Inglehart 2004). Third, a more serious limitation of these findings is that these surveys are based on self-reports of prosocial behavior, and are thus open to several alternative interpretations (for a critique, see Norenzayan and Shariff 2008). In psychology, a long line of work has shown that self-reports of socially desirable behaviors such as charitability or honesty are often exaggerated, and are strongly influenced by social desirability, impression management, or self-deception (Paulhus 1984). Therefore, the charity gap found in these surveys may be more reflective of "appearing good," rather than "doing good." This interpretation is plausible since religiosity is positively associated with socially desirable responding (e.g., Sedikides and Gebauer 2010). Finally, new experimental evidence suggests that this relationship is causal: religious reminders increase impression management concerns among believers (Gervais and Norenzayan 2012c). These findings raise serious questions about the validity of relying on self-reports to assess charitable behavior or generosity. To address these methodological limitations, experiments that assess prosocial behavior (not self-report of prosocial behavior) are necessary.

Correlating Religious Involvement and Prosocial Behavior

In social psychology, Batson and colleagues have systematically explored this question. In several behavioral studies under anonymous conditions, researchers failed to find any reliable association between religiosity and prosocial tendencies (Darley and Batson 1973). More recent studies have similarly found no strong evidence to associate religiosity with prosocial behavior in anonymous contexts in the United States (Paciotti et al. 2011). Subsequently, several laboratory studies with Christian university student participants in the United States have found that religious involvement does predict more prosocial behavior, but only when the prosocial act could promote a positive image for the participant, either in their own eyes or in the eyes of observers (Batson et al. 1993).

Other behavioral studies have also found reliable associations between various indicators of religiosity and prosociality, albeit under limited conditions. A study employing a common pool resource game allowed researchers to compare levels of cooperation and coordination between secular and religious kibbutzim in Israel (Sosis and Ruffle 2003). In this game, two members of the

same kibbutz who remained anonymous to each other were given access to an envelope with a certain amount of money. Each participant simultaneously decided how much money to withdraw from the envelope and keep. Players only kept the money they requested if the sum of their requests did not exceed the total amount in the envelope. If it did, the players received nothing. Controlling for relevant variables, participants showed higher cooperation in the religious kibbutzim than in the secular ones; the effect was driven by highly religious men, who engaged in daily and communal prayer, and took the least amount of money from the common pool. A study conducted by Soler (2012), among members of an Afro-Brazilian religious group, showed similar results. In this public goods game, participants were divided into n-person anonymous groups. Each participant was given an equal monetary endowment, any portion of which they could keep for themselves or contribute to a common pool. Any contribution to the common pool would get doubled, then distributed equally back to the participants. Controlling for various sociodemographic variables, individuals who displayed higher levels of religious commitment behaved more generously and reported more instances of both giving and receiving within their religious community. Ahmed (2009) found similar results in a public goods game in a study conducted in rural India with a Muslim population. Devout Muslim students in a *madrassah* contributed more to a public good compared to a matched group of students in a secular school. The effect was sizable: whereas 15% of secular participants contributed nothing, only 2% did not contribute anything in the more religious group.

Prosocial religions, such as Christianity, Islam, and many variants of Hinduism, endorse a package of beliefs and practices that revolves around powerful, omniscient, and morally involved gods who demand credible displays of faith from their adherents. In an investigation spanning 15 societies of pastoralists and horticulturalists, Henrich et al. (2010a) measured the association between religious participation and prosocial behavior in three standard bargaining games. In the dictator game, two anonymous players are allotted a sum of real money (a day's wage) in a one-shot interaction. Player 1 must decide how to divide this sum between himself and Player 2. Player 2 then receives the allocation from Player 1. The ultimatum game is identical to the dictator game, except that Player 2 can accept or reject the offer. If Player 2 specifies that he would accept the amount of the actual offer, then he receives the amount of the offer and Player 1 receives the rest. If Player 2 specifies that he would reject the amount offered, both players receive zero. Unlike previous studies, this game specifically tested the idea that participation in prosocial religions engenders more prosocial behavior compared to participation in local religions that typically do not have a prosocial dimension. Henrich et al. found that, controlling for a host of demographic and economic variables, participation in a world religion (Christian or Muslim) increased offers in the dictator game by 6%, and in the ultimatum game by 10% (when the stake was standardized at 100).

Interestingly, however, world religion did not reliably predict offers in another economic game: the third-party punishment game, which allows people to punish others for not playing fairly. In this experiment, people in some societies also made lower (less equal) offers. Analyzing the data from all three experiments indicates that adding the third-party punishment drove out the component of prosociality created by religion. Combined with other recent findings which show that secular and divine sources of punishment are perceived to be interchangeable (Laurin et al. 2012), this suggests that adding a third-party punisher "replaces god" in a sense, leading to both lower offers and no impact of religion in this experiment.

There are several potential pathways through which religion might operate to increase prosociality. One possible pathway, which we explain further below, is the supernatural monitoring hypothesis: religious believers act prosocially to the extent that they experience being under supernatural surveillance by watchful, moralizing gods (Norenzayan and Shariff 2008; Bering 2011). Relatedly, another potential complementary pathway involves extravagant rituals or seemingly costly devotions (Slingerland et al., this volume; Xygalatas et al. 2013). Such practices can sustain greater prosociality and social solidarity because, as credible displays of deep faith, they lead to more successful cultural transmission of these belief-ritual complexes (Henrich 2009a). Alternatively, or in addition, ritual participation may, through various mechanisms, serve as a cooperative signal, encouraging greater prosocial behavior (Sosis and Alcorta 2003; Bulbulia 2004). Whitehouse (this volume) theorizes that infrequent, high-arousal rituals build solidarity at the level of relatively small social units, whereas the frequent, low-arousal rituals of larger-scale societies foster cultural cohesion on a broader social scale. There likely are other pathways as well (for discussion, see Slingerland et al., this volume).

The anthropological record is consistent with these ideas. In moving from the smallest-scale human societies to the largest and most complex, Big Gods (i.e., powerful, omniscient, interventionist supernatural watchers who demand extravagant displays of loyalty) go from relatively rare to increasingly common (Roes and Raymond 2003; Swanson 1966), and morality and religion move from largely disconnected to increasingly intertwined (Wright 2009). As societies get larger and more complex, ritual forms also change, becoming more frequent and dogmatic, increasingly used to transmit and reinforce religious orthodoxy (Atkinson and Whitehouse 2011). A recent cross-cultural study (Atkinson and Bourrat 2010) provides evidence that participation in prosocial religions goes hand in hand with a stricter moral enforcement of norms. In a large global sample of 87 countries from the World Value Survey, beliefs about two related sources of supernatural monitoring and punishment—God and the afterlife, as well as frequency of religious attendance—were found independently to predict harsher condemnation of a range of moral transgressions, such as cheating on taxes or fare-skipping on public transport. Importantly,

belief in a personal God was more strongly related to these outcomes than belief in an abstract impersonal God.

Reconciling Inconsistent Findings on Religious Prosociality

In recent laboratory studies conducted in Western societies (mostly with university students), where prosocial behavior is measured in anonymity, individual differences in religious commitment typically fail to predict prosocial behavior reliably (for a discussion, see Norenzayan and Gervais 2012). This is similar to earlier findings which indicate that religious participants show greater prosocial tendencies when the prosocial act can enhance one's self-image, but that religiosity is a null predictor when no such reputational incentives are available (e.g., Batson et al. 1993). These findings deserve more scrutiny. Why does religious involvement predict prosocial behavior in some studies, but not others? Here we propose three explanations to resolve these inconsistencies.

One explanation is that, compared to a typical social psychology study with student samples, reminders of religion are likely to be more chronically present in religious kibbutz, *madrasahs*, and Candomblé communities, where religious prayer and attendance are a daily part of life. This is important because any behavior is more likely to occur to the extent that concepts associated with these behaviors are primed through situational cues (e.g., Bargh and Chartrand 1999).

A second explanation is that prosociality in these communities clearly benefits in-group members (despite being anonymous), whereas in psychological studies that are conducted in anonymous contexts, the victim or the recipient of generosity typically is a total stranger. In the classic "Good Samaritan" study (Darley and Batson 1973), for example, seminary students were led to walk past a stranger (actually, a confederate of the researcher) lying on the ground who appeared in need of help. Levels or types of religious involvement failed to predict helping rates.

A third important factor that helps reconcile these null findings with the literature reviewed above is cultural differences in the strength of secular institutions. Note that all of the studies which found weak or no reliable associations between religiosity and prosociality were conducted on Western, Educated, Industrialized, Rich, and Democratic (WEIRD) samples (Henrich et al. 2010b), whereas all of the studies which found reliable associations were typically conducted on non-WEIRD samples. In WEIRD societies, high trust levels toward secular institutions (e.g., the police, courts, governments) encourage high levels of prosocial behavior across the board (Hruschka and Henrich, submitted) and might crowd out the influence of religion on prosociality. Conversely, in societies with weak institutions, religion has no credible alternative and is the main driver of broad prosociality. Consistent with this idea, in societies with

strong institutions such as Canada, experimentally induced subtle reminders of secular authority (e.g., concepts such as police, court, judge) reduce believers' reliance on religion as a source of morality (Gervais and Norenzayan 2012c). Furthermore, in a cross-national analysis that controlled for a number of relevant factors such as human development, general trust, and individualism, it was found that believers are more trusting of atheists in politics if they are culturally exposed to strong secular institutions as measured by the World Bank's index (Norenzayan and Gervais 2013b).

In summary, a growing number of behavioral studies have found associations between religious commitment and prosocial tendencies, especially when secular sources of prosocial behavior are unavailable (i.e., weak institutions), reputational cues are heightened (e.g., helping is not anonymous), and the targets of prosociality are in-group members (we will return to this latter point below). However, causal inference in these studies is limited by their reliance on correlational designs. If religious devotion is related to prosocial behavior in some contexts, it cannot be conclusively ruled out that having a prosocial disposition causes one to be religious or that a third variable, such as dispositional empathy or guilt proneness, causes both prosocial and religious tendencies. Recent controlled experiments have addressed this issue by experimentally inducing religious thinking and subsequently measuring prosocial behavior.

Experimental Evidence: Religious Priming

If religious belief has a causal effect on prosocial tendencies, then experimentally induced religious thoughts should increase prosocial behavior in controlled conditions. If so, subtle religious reminders may reduce cheating, curb selfish behavior, and increase generosity toward strangers. This hypothesis was tested and supported in two anonymous dictator game experiments: one used a sample of university students while the other used nonstudent adults in Canada (Shariff and Norenzayan 2007). In one experiment, adult nonstudent participants were randomly assigned to three groups:

1. Participants in the religious prime group unscrambled sentences that contained words such as *God*, *divine*, and *spirit*.
2. The secular prime group unscrambled sentences with words such as *civic*, *jury*, and *police*.
3. The control group unscrambled sentences with entirely neutral content.

Each participant subsequently played an anonymous one-shot dictator game (described above). Post-experimental interviews showed that participants were unaware of religious content and remained naïve concerning the hypothesis being tested. Compared to the control group, nearly twice as much

money was offered by subjects in the religious prime group, who not only showed a quantitative increase in generosity but also a qualitative shift in social norms. In the control group, the modal response was selfish: most players pocketed the full ten dollar stake allotted to them. In the religious prime group, the mode shifted to equality: participants split the money evenly. Of particular interest, the secular prime group had as much effect as the religious prime group. This suggests that secular mechanisms, when available, can also encourage generosity.

These findings have been replicated with a Chilean Catholic sample and show similar religious priming effects on generosity in the dictator game and on cooperation levels in the prisoner's dilemma game. In the latter game, self-interest leads both parties to not cooperate, but cooperation leads to better reward for both (Ahmed 2011). Religious primes have also been shown to reduce cheating among student samples in North America (Randolph-Seng and Nielsen 2007), as well as in children (Piazza et al. 2011). McKay et al. (2011) found that subliminal religious priming increased third-party costly punishment of unfair behavior in a Swiss sample, but only for religious participants who had previously donated to a religious charity (for similar results regarding altruistic punishment, see Laurin et al. 2012). Taking a "situational priming" approach, Xygalatas (2013) randomly assigned Hindu participants in Mauritius to play a common pool resource game (described earlier), either in a religious setting (a temple) or in a comparable secular setting (a restaurant). He found that participants, regardless of their self-reported intensity of religiosity, withdrew less from the shared pool of money when they played the game in the temple compared to when playing in the restaurant.

There is some evidence that priming effects are to some extent parochial as well as prosocial, as prime-induced religious prosociality is sensitive to group boundaries. This question is open for detailed investigation. Currently we know of one preliminary study with Canadian Christians (Shariff and Norenzayan, unpublished) which suggests that, in a one-shot dictator game, religiously primed Christian givers were most generous toward a Christian receiver, less generous toward a stranger with unknown religious affiliation, and even less generous toward a Muslim receiver (playing with a Muslim receiver was the equivalent of not being primed with religious words). This is not surprising given that human prosocial behavior is shaped by parochial concerns (Koopmans and Rebers 2009).

In summary, a small but growing literature shows that the arrow of causality goes from religion to a variety of prosocial behaviors, including generosity, honesty, cooperation, and altruistic punishment. Next we examine the psychological mechanisms underlying these religious priming effects and explore evidence that these effects are due, at least in part, to perceptions of being under supernatural monitoring.

Why Do Religious Reminders Increase Prosociality?

What are the psychological processes that might explain the empirical link between religious primes and prosociality? Two distinct accounts suggest themselves (for the potential role of development, see Whitehouse, this volume). First, the *supernatural monitoring* account argues that heightened awareness of being under social surveillance increases prosociality. Thoughts of religions invariably activate reminders that God or gods—omniscient and morally concerned judges—are watching (Gervais and Norenzayan 2012b). Granted, as an ultrasocial species, humans can be prosocial even when no one is watching (Henrich and Henrich 2007; Barmettler et al. 2012). Nevertheless, being under social surveillance encourages prosociality. A large number of studies show that feelings of anonymity—even illusory anonymity, such as the act of wearing dark glasses or sitting in a dimly lit room—increase the likelihood of selfishness and cheating (Zhong et al. 2010; see also Hoffman et al. 1994). Conversely, social surveillance (e.g., being in front of cameras or audiences) has the opposite effect. Even incidental and subtle exposure to representations of eyes encourages good behavior toward strangers in the laboratory (Haley and Fessler 2005; Rigdon et al. 2009) as well as in real-world settings (Bateson et al. 2006; for a critique, see Fehr and Schneider 2010). As the saying goes, "watched people are nice people." It is no surprise, then, that the notion of supernatural watchers who observe, punish, and reward morally relevant behaviors has spread culturally in prosocial religions.

A second possibility is the *behavioral priming* or *ideomotor* account. The idea behind this hypothesis is that prosocial behavior is more likely if concepts related to benevolence or generosity are unconsciously activated (e.g., Bargh et al. 2001). If thoughts of God are associated with notions of benevolence and charity, then priming these thoughts may activate prosocial behavior, just as activating the social stereotype of the "elderly" increases behaviors consistent with it, such as slow walking speed (Bargh and Chartrand 1999; for this interpretation, see Pichon et al. 2007; Randolph-Seng and Nielsen 2007). To be clear, these two accounts are not mutually exclusive and in fact may operate together to produce prosocial effects of religion. The vital question is not whether ideomotor effects result from religious primes—they almost certainly do. Instead, it is important to ask whether supernatural monitoring effects *also* result from religious primes.

What evidence can distinguish the supernatural watcher account from behavioral priming processes? Norenzayan et al. (2010) discuss three empirical criteria. First, if the supernatural watcher account is in play, religious primes should arouse both feelings of external authorship for events and perceptions of being under social surveillance independent of any prosocial behavior. Second, if religious priming effects are weaker or nonexistent for nonbelievers, then the effect could not be solely due to ideomotor processes, which are argued to be impervious to prior explicit beliefs or attitudes associated with

the behavior (e.g., see Bargh et al. 2001; Bargh and Chartrand 1999). This is because everyone, including nonbelievers, is aware of (although they do not necessarily endorse) the association between religious concepts and benevolence. Therefore, if ideomotor processes are solely responsible for these effects, awareness should be sufficient to trigger priming effects. Third, differing perceptions of supernatural agents can disentangle these two accounts. Specifically, the supernatural monitoring hypothesis predicts that the belief that God is punitive should encourage more prosociality, whereas the ideomotor account would lead to the contrary expectation; namely, that belief in a benevolent God is a stronger motivator for prosocial behavior.

Addressing the first question, several religious priming experiments clearly separate the felt presence of a supernatural agent from their prosocial outcomes. Dijksterhuis et al. (2008) found that after being subliminally primed with the word "God," believers (but not atheists) were more likely to ascribe an outcome to an external source of agency, rather than their own actions. In four studies, Gervais and Norenzayan (2012b) followed up on this line of reasoning and found that thinking of God does, indeed, influence variables that are sensitive to perceived social surveillance, independent of any ideomotor effects associated with benevolence or prosociality. The results suggest that religious primes trigger not only notions of benevolence, but also experiences associated with mind perception (i.e., feelings of being observed by an intentional agent) as the supernatural monitoring hypothesis predicts (for evidence that religious agents trigger mind perception, see also Norenzayan et al. 2012).

To address the second question, it is necessary to reexamine the priming literature in light of the second criterion: Do God primes influence behavior independent of prior belief, or are these effects confined to believers? Ideomotor processes typically do not interact with prior belief. A supernatural monitoring account, on the other hand, would suggest that people who believe in the actual existence of supernatural beings should be most susceptible to these primes, whereas nonbelievers should be less susceptible. The answer to this question is also crucially important for debates about evolutionary origins of religion. Genetic adaptationist accounts of religious prosociality (for a discussion, see Schloss and Murray 2011) would predict that everyone, even self-declared atheists, are responsive to supernatural monitoring effects (e.g., Bering 2011). Cultural evolutionary accounts of religious prosociality, on the other hand, are more compatible with the prediction that responsiveness to supernatural monitoring is culturally variable (e.g., Norenzayan and Shariff 2008; Henrich et al. 2010a). To be clear, socialization with culturally variable concepts of the divine could produce effects on prosociality that supplement or compete with universal religious tendencies to behave prosocially. Therefore, cultural variability is not incompatible with a genetic adaptationist account, provided there is no complete absence of an effect for nonbelievers. Moreover, the answer to this question reveals critical details about the psychology of atheism, a topic of great importance ripe for research,

but unfortunately beyond the scope of this report (for further discussion, see Norenzayan and Gervais 2013a).

A review of the (admittedly limited) relevant evidence suggests that at least some nonbelievers are impervious to religious priming effects, a finding that is compatible with the idea that supernatural monitoring plays a part in religious priming effects. There is currently mixed evidence as to whether religious priming effects (typically bypassing conscious awareness) interact with explicit belief (for discussion, see Norenzayan et al. 2010). Some studies have found religious priming effects—irrespective of the explicit prior religious belief of participants—on honesty (Randolph-Seng and Nielsen 2007), generosity in the dictator game (Shariff and Norenzayan 2007, Study 1), public self-awareness (Gervais and Norenzayan 2012b, Study 3), and prosocial intentions (Pichon et al. 2007). Several other studies, however, found significant interaction with prior religious belief, reflecting null effects for nonbelievers (Dijksterhuis et al. 2008; Shariff and Norenzayan 2007, Study 2; McKay et al. 2011; Gervais and Norenzayan 2012b; Piazza et al. 2011; Laurin et al. 2012). In a recent meta-analysis of religious priming effects on prosocial behavior, Shariff, Willard, Andersen, and Norenzayan (unpublished) found a reliable and sizable effect for religious believers. However, on average, religious priming was unreliable and statistically nonsignificant for nonbelievers. Again, this suggests there is much variability in the extent to which nonbelievers are responsive to religious reminders. Laurin et al. (2012) found similarly that the effects of reminders of God were specific to believers only, and led to increased punishing behavior. Furthermore, believing that God is punishing caused *less* punishing behavior (presumably because participants could offload punishing duties to God). This last point is the opposite of what one would predict from the ideomotor account.

Further examination of the priming studies portrays a revealing pattern: all of the priming studies that have shown no interaction with prior belief have also recruited exclusively American university student samples. However, student atheists, particularly in religious America, might be "soft atheists." In one religious priming experiment that recruited a nonstudent adult sample in Vancouver, Canada (Shariff and Norenzayan 2007, Study 2), the effect of the prime emerged for believers, but disappeared entirely for "hard" atheists. Similarly, in the majority nonreligious Netherlands, Dutch student nonbelievers were not responsive to religious priming effects, even when they were presented subliminally (Dijksterhuis et al. 2008). Finally, in the more secular environment of Vancouver, no reliable priming effects were found on student nonbelievers across several studies (Gervais and Norenzayan 2012b).

Finally, consistent with the theoretical idea that punishment is superior to reward in sustaining prosocial behavior, there is a *negative* relationship between cheating behavior and the degree to which people endorse a vision of God as punitive and judging, whereas cheating rates *increase* with the belief that God is benevolent and forgiving (Shariff and Norenzayan 2011; Debono et

al., unpublished). Consistent with these experimental findings, cross-national analyses (Shariff and Rhemtulla 2012) reveal that, controlling for a number of relevant socioeconomic and psychological variables such as gross domestic product, economic inequality, belief in God, and relevant personality dimensions, belief in hell is negatively related to crime rates, whereas belief in heaven has the opposite effect. As with the findings by Laurin et al. (2012), these results are difficult to reconcile with a purely ideomotor account, which presumably would lead to the opposite expectation (i.e., that a benevolent and kind God would more clearly fit the prosocial stereotype that causes greater prosocial behavior and less antisocial behavior, and that reminders of a benevolent God would reduce punishing behavior).

To summarize what we know about the psychological mechanisms underlying religious priming, several lines of evidence show that religious reminders increase the perception of external authorship of events and perceptions of social surveillance independent of any prosocial consequences. In addition, there is mounting evidence that the effects of religious primes are most effective among believers, and there is provocative (though preliminary) evidence that mature nonbelievers are less susceptible, and possibly immune, to these primes. A reasonable initial conclusion from the empirical evidence is that, at the very least, both accounts remain viable. Therefore, the supernatural monitoring hypothesis and the ideomotor hypothesis may reflect the operation of independent psychological mechanisms that link religion to prosocial tendencies. These mechanisms also have differing theoretical implications for the relationship between religion and prosociality. Whereas the ideomotor hypothesis posits that the link between religion and prosociality is the *consequence* of a cultural association reflected at the cognitive level, the supernatural monitoring hypothesis speaks to the more basic evolutionary question of *why* religion might *cause* large-scale anonymous prosociality in humans. If reminders of moralizing gods make people feel watched, then beliefs in moralizing gods, who can monitor social interactions even when no humans are watching, may have been instrumental in promoting large-scale human cooperation.

Ethnographic and Historical Evidence: How Supernatural Monitoring Contributed to Large-Scale Prosociality

Over time and as groups gain in size, morality and religion move from being disconnected to increasingly intertwined, and gods become more powerful, moralizing, and interventionist (Wright 2009). Ethnographic work shows that in foraging and hunting groups, such as the Hadza or the San, religion does not have a moral dimension and the gods are largely indifferent to human moral affairs (Boyer 2001; Swanson 1966). In an earlier assessment of the ethnographic record, Swanson (1966:153) concluded:

> The people of modern Western nations are so steeped in these beliefs which bind religion and morality, that they find it hard to conceive of societies which separate the two. Yet most anthropologists see such a separation as prevailing in primitive societies.

Here we briefly highlight ethnographic and historical evidence that indicates that across groups and over time, supernatural monitoring coevolved with increasingly large, complex, cooperative societies.

In his review of 427 societies from the Ethnographic Atlas, Stark (2001) found that only 23.9% acknowledge a god who is active in human affairs and is specifically supportive of human morality. Religions with such gods are, in fact, peculiar. Yet, the vast majority of human beings today live in prosocial religious groups with big moralizing gods. Going further, in one notable analysis using the standard cross-cultural sample, Roes and Raymond (2003) showed that the variability in supernatural sanctioning found in the ethnographic record is correlated with group size: the larger the group size, the more likely the group has culturally sanctioned omniscient, all-powerful, morally concerned deities who directly observe, reward, and punish social behavior. This highlights one problem with much of the work in the psychology of religion, as Christianity is often used as a representative religion, when in fact it is a rather unusual religion.

These ethnographic findings converge with what can be gleaned from historical analyses. The archaeological record is, of course, limited, but available evidence hints at the possibility that the expansion of regular rituals and the construction of religiously significant monumental architecture co-emerged with increasing societal size, political complexity, and reliance on agriculture (Marcus and Flannery 2004). Evidence for this can be found in Çatalhöyük, a 9,500-year-old Neolithic site in southern Anatolia (for a discussion, see Whitehouse and Hodder 2010). The excavation of Göbekli Tepe, an 11,000-year-old complex of monumental architecture, suggests that it may have been one of the world's first temples, where hunter-gatherers possibly congregated and engaged in organized religious rituals (Schmidt 2010).

Once the written historical record begins, it becomes much easier to establish clear links between large-scale cooperation, ritual elaboration, and powerful gods who police human behavior. This historical work is ongoing, and many questions are being actively debated. However, some historical patterns have emerged. The best documented historical work looks at Abrahamic faiths. Wright (2009) provides a useful summary of textual evidence that reveals the gradual evolution of the Abrahamic God from a rather limited, whimsical, tribal war god—a subordinate in the Pantheon—to the unitary, supreme, moralizing deity of two of the world's largest religious communities. Evidence from early China also shows that supernatural monitoring played a key role in the emergence of the first large-scale societies in East Asia (see Slingerland et al., this volume). Turchin (2009) offers an account of how Axial Age religions

fostered cohesion among agrarian societies. In an analysis that compares the longevity of religious and secular communes in nineteenth-century America, Sosis and Bressler (2003) found that religious communes outcompeted secular ones, and this survival advantage was statistically explained by the costly displays and restrictions on behaviors that religious communes imposed on their members (Henrich 2009a). (Presumably these behaviors increased in-group commitment and cooperation.) The ethnographic and historical record, taken together with the empirical evidence reviewed above, points to the idea that religious beliefs and practices played a key role in the spread of prosocial groups over the last 12,000 years.

Outstanding Questions

We conclude with some outstanding questions for further research which we believe has the potential to advance theoretical work on the origins of religious prosociality, and invite discussion about future directions:

- An important extension would be to conduct religious priming studies in smaller-scale societies, where reminders of morally indifferent gods could be compared to the Abrahamic God or the powerful, moralizing gods of other world religions. These comparisons would help researchers tease apart cultural evolutionary explanations from genetic adaptationist explanations of religious prosociality.
- A deeper understanding of the psychology underlying atheism may also shed light on competing explanations for the evolutionary origins of religion. For example, genetic adaptationist arguments for religion would presumably predict that even atheists are responsive to nonconscious religious priming. Cultural evolutionary explanations, in contrast, would predict that *at least some atheists* would be immune to religious priming. Studies could compare "atheist converts" with "lifetime atheists" to clarify the extent to which religious prosociality is culturally learned. These questions are ripe for empirical investigation.
- Historical and cross-cultural comparative work should be done to examine the extent to which secular alternatives to religious prosociality—institutions such as courts, contracts, and police—can culminate in the decline of religion in societies. This again could help us understand the extent to which religious prosociality is genetically fixed, culturally learned, or both.
- It is important to tease apart the relative effects of various elements that get labeled "religion" on prosociality. Future studies should assess in a more fine-grained fashion the extent to which religious prosociality is explained by belief in supernatural monitors and supernatural punishment mechanisms (such as belief in heaven vs. hell, karma, fate),

and by various forms and elements of ritual participation (such as synchrony, extravagance, and emotional intensity).

- Beyond anecdotal evidence, we know relatively little about the social boundaries of religious prosociality. Does it weaken, or break down, where the religious in-group ends and the out-group begins? Or is religious prosociality, in some respects, extended universally? Can religious prosociality be harnessed and co-opted to extend cooperation and solve collective action problems?

First column (top to bottom):   Armin Geertz, Joe Henrich, Herb Gintis, Joe Henrich, Fiona Jordan, Harvey Whitehouse, Pieter François
Second column: Joseph Bulbulia, Ara Norenzayan, Quentin Atkinson, Armin Geertz, Joseph Bulbulia, Pete Richerson, Nick Evans
Third column: Emma Cohen, Peter Turchin, Harvey Whitehouse, Thomas Widlok, David Wilson, Ted Slingerland, Russell Gray