

Research Article

God Is Watching You

Priming God Concepts Increases Prosocial Behavior in an Anonymous Economic Game

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ABSTRACT—We present two studies aimed at resolving experimentally whether religion increases prosocial behavior in the anonymous dictator game. Subjects allocated more money to anonymous strangers when God concepts were implicitly activated than when neutral or no concepts were activated. This effect was at least as large as that obtained when concepts associated with secular moral institutions were primed. A trait measure of self-reported religiosity did not seem to be associated with prosocial behavior. We discuss different possible mechanisms that may underlie this effect, focusing on the hypotheses that the religious prime had an ideomotor effect on generosity or that it activated a felt presence of supernatural watchers. We then discuss implications for theories positing religion as a facilitator of the emergence of early large-scale societies of cooperators.

Many theorists have suggested that the cognitive availability of omniscient and omnipresent supernatural agents has had a dramatic impact on the development of large-scale human societies. The imagined presence of such agents, along with emotional ritual and costly commitment to the social group they govern, may have been the major development that allowed genetically unrelated individuals to interact in cooperative ways (e.g., Atran & Norenzayan, 2004; Irons, 1991; Sosis & Ruffle, 2004). The research reported in this article experimentally investigated this link between two broad classes of culturally widespread phenomena of interest to social science—religious beliefs and cooperative behavior among unrelated strangers.

Although anecdotes documenting religion's prosocial and antisocial effects abound, the empirical literature has produced mixed results regarding religion's role in prosocial behavior.

Sosis and Ruffle (2004) examined levels of generosity in an experimental cooperative pool game in religious and secular kibbutzim in Israel and found higher levels of cooperation in the religious ones, and the highest levels among religious men who engaged in daily communal prayer. Batson and his colleagues (Batson et al., 1989; Batson, Schoenrade, & Ventis, 1993) have shown that although religious people report more explicit willingness to care for others than do nonreligious people, controlled laboratory measures of altruistic behavior often fail to corroborate this difference. Furthermore, when studies demonstrate that helpfulness is higher among more devoted people, this finding is typically better explained by egoistic motives such as seeking praise or avoiding guilt, rather than by higher levels of compassion or by a stronger motivation to benefit other people.

However insightful these findings are, research on religion and prosocial behavior has been limited by its overwhelming reliance on correlational designs. If religiosity and prosocial behavior are found to be correlated, it is just as likely that having a prosocial disposition causes one to be religious, or that some third variable such as guilt proneness or dispositional empathy causes both cooperative behavior and religiosity, as that religious beliefs somehow cause prosocial behavior. Only rarely have studies induced supernatural beliefs to examine them as a causal factor. Bering (2003, 2006) inhibited 3-year-old children's tendencies to cheat (i.e., open a "forbidden box") by telling them that an invisible agent ("Princess Alice") was in the room with them. In a different study, college students who were casually told that the ghost of a dead graduate student had been spotted in their private testing room were less willing to cheat on a computerized spatial-reasoning task than were those told nothing (Bering, McLeod, & Shackelford, 2005). These studies suggest that explicit thoughts of supernatural agents curb cheating behavior.

In the research reported here, we examined the effect of God concepts specifically on selfish and prosocial behavior. Our research design was novel in two ways. First, we introduced an

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experimental procedure to activate God concepts implicitly, without having subjects consciously reflect on these concepts. Second, in lieu of relying on self-report measures, we used a paradigm of cooperative behavior that is well researched in psychology and economics: the dictator game. So that we could obtain an honest indicator of prosocial tendencies, rather than artifacts of impression management, the game was conducted in a strictly controlled anonymous setting with real monetary consequences.

The purpose of the first study was to implicitly prime God concepts among student subjects and examine how this affected their generosity. The second study was intended to replicate our main finding from the first study in a more heterogeneous community sample and to compare the strength of the religious prime with that of a secular prime of social institutions enforcing morality.

STUDY 1

Method

Subjects

Fifty subjects (mean age = 21 years; 34 females and 16 males) were recruited through posters displayed at the University of British Columbia, Canada, and randomly assigned to either the religious-prime or the no-prime condition. Twenty-six indicated identification with a religion, and 24 did not. Of the religious subjects, 19 identified themselves as Christians, 4 as Buddhists, 2 as Jews, and 1 as a Muslim. Of the remaining 24 subjects, 19 were categorized as atheists and 5 as theists without an organized religion. Subjects were defined as atheists if they both indicated “none” for religion and scored below the midpoint of the scale on a question assessing belief in God. Subjects who did not indicate a religious identification but nonetheless scored higher than the midpoint on the belief-in-God question were categorized as theists, along with those who did state specific religious identifications.

Procedure and Materials

All subjects were seated in private rooms behind closed doors for the duration of the experiment. Half of the subjects were implicitly primed with God concepts using the scrambled-sentence paradigm of Srull and Wyer (1979). The other half received no prime. Following this task, each subject played a one-shot, anonymous version of the dictator game (Hoffman, McCabe, Shachat, & Smith, 1994) against a confederate posing as another subject. All actual subjects were given the following instructions:

You have been chosen as the **giver** in this economic decision-making task. You will find 10 one-dollar coins. Your role is to take **and keep** as many of these coins as you would like, knowing that however many you leave, if any, will be given to the receiver subject to keep.

To free subjects from reputational concerns, we assured them that only the other subject would know what they decided and that their identity would be hidden from that subject. Once they had made their decision, they completed a number of measures assessing religious belief and requesting demographic information. Each subject was then debriefed (both in writing and verbally) regarding the deception and the true aims of the experiment, compensated for participating, thanked, and dismissed.

For the priming manipulation (Srull & Wyer, 1979), subjects were required to unscramble 10 five-word sentences, dropping an extraneous word from each to create a grammatical four-word sentence. For example, “felt she eradicate spirit the” would become “she felt the spirit,” and “dessert divine was fork the” would become “the dessert was divine.” Five of the scrambled sentences contained the target words *spirit*, *divine*, *God*, *sacred*, and *prophet*, and the other 5 contained only neutral words unrelated to religion, and forming no other coherent concept.

Results and Discussion

Previous research has demonstrated that the majority of givers act selfishly in this anonymous game, leaving little or no money for the receiver, although some prosocial behavior is observed even in anonymous one-shot games (Haley & Fessler, 2005; Hoffman et al., 1994). This selfish tendency was confirmed in our control condition. Subjects who received no prime left, on average, \$1.84 for the other subject, with 52% leaving \$1 or less, only 12% leaving \$5, and none leaving more than \$5. Those who were primed with God concepts left, on average, \$4.22, with 64% leaving \$5 or more. The average amount of money left was \$2.38 more in the religious-prime condition, a considerable difference, $t(48) = 3.69$, $p < .001$, $p_{\text{rep}} = .99$, $d = 1.07$. A comparison of subjects who left either nothing or \$5 showed that a higher proportion of subjects behaved selfishly (offering nothing) in the control condition (36%) than in the religious-prime condition (16%), whereas a higher proportion behaved fairly (offering exactly \$5) in the religious-prime condition (52%) than in the control condition (12%), $\chi^2(1, N = 29) = 7.5$, $p = .006$, $p_{\text{rep}} = .96$, shifting the modal response from selfishness to fairness (see Fig. 1).

This effect was present for both theists (prime-control difference of \$1.88), $t(29) = 2.25$, $p = .032$, $p_{\text{rep}} = .91$, $d = 0.84$, and atheists (prime-control difference of \$2.95), $t(17) = 2.70$, $p = .015$, $p_{\text{rep}} = .94$, $d = 1.31$. Although unprimed atheists left slightly less than did unprimed theists (\$0.97), this trend was weak and was not statistically significant, $t(23) = 1.34$, $p = .19$, $p_{\text{rep}} = .73$. Self-reported belief in God, as a continuous measure, was not a good predictor of how much subjects left in the control condition, $r(24) = .23$, $p = .29$, $p_{\text{rep}} = .65$. In summary, implicit priming of God concepts did increase prosocial behavior (i.e., increased how much subjects left for an anonymous stranger), and this effect was observed for both theists and atheists. The

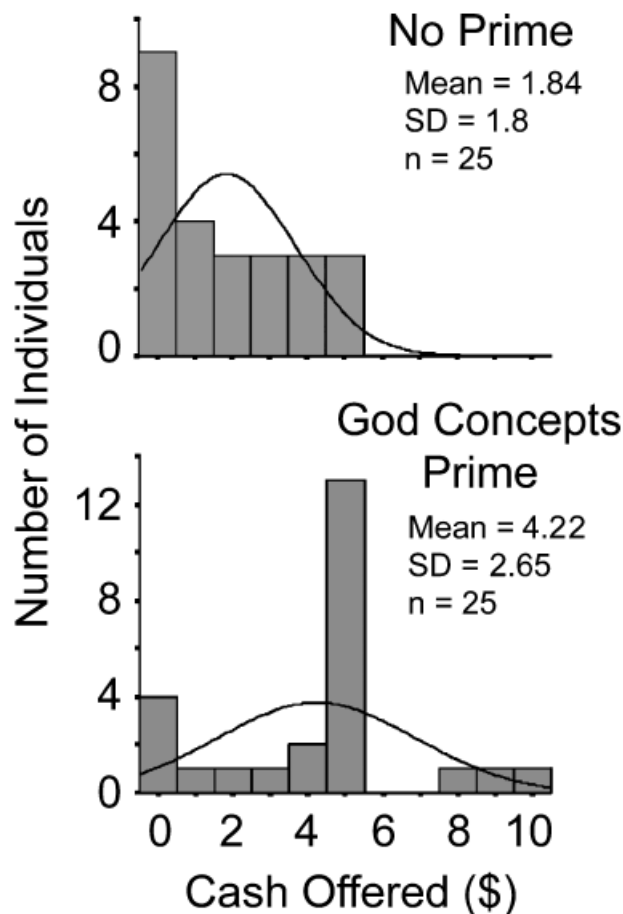


Fig. 1. Frequency distribution of money offered in the no-prime and religious-prime conditions of Study 1.

implicit religious prime proved to be much more effective at curtailing selfish behavior than was explicit religious belief.

Although these findings are compelling, their generalizability is limited by our reliance on a student sample. The behavior of such samples in economic games can be unrepresentative of larger, more heterogeneous populations in the world (Henrich et al., 2005). Moreover, the results of this study are open to the criticism that the control group did not receive a neutral prime. It is conceivable, although implausible, that merely being primed with words, rather than with religious concepts specifically, led to the difference between the control and religious-prime conditions. Moreover, we did not specifically establish that the implicit religious prime indeed affected behavior without reflective awareness of the subjects. All of these concerns were addressed in the second study.

STUDY 2

Overview

In the second study, we sought to replicate and expand the findings of the first. There were four main changes. First, instead of relying on a college sample, we recruited subjects from the larger community in Vancouver, Canada. Second, we replaced

the no-prime control condition with a neutral-prime condition. Third, and most important, we introduced an additional priming condition to examine the strength of the religious prime relative to a prime of secular institutions of morality. Political philosophers since at least Voltaire (1727/1977) and Rousseau (1762/1968) have suggested that any moral benefits provided by religion could be gleaned just as easily, if not more easily, from nonreligious sources. The ideas of a justice system and, more generally, a social contract could be considered the strongest modern examples of such secular sources of moral influence. Thus, in Study 2, we added a secular-prime condition so we could examine the relative effects of religious and secular primes. Finally, we examined whether subjects reported any awareness that the primes activated religious thoughts.

Method

Subjects

Seventy-eight subjects were recruited via a combination of posters placed around Vancouver and newspaper ads. Of these subjects, 3 were dropped from analysis because of their suspicions about the study's hypothesis, leaving 75 participants equally distributed among the three conditions. Only 22% were students, and the sample was quite diverse. Ages ($M = 44$ years) ranged from 17 to 82. Yearly household incomes ($M = \$35,000$) ranged from under \$10,000 to over \$80,000. Categorization of subjects in this study was based in part on responses to a new question, not used in Study 1, asking them specifically to mark whether they considered themselves religious, spiritual, agnostic, or atheistic. Of the subjects who indicated their religion, 25 identified themselves as Christians, and 3 as Jews. Of the remaining 47 subjects, 21 reported being "spiritual," 22 reported being agnostics or atheists, and 4 declined to answer. Subjects were categorized as atheists only if they both identified themselves as atheist or agnostic and scored below the midpoint of the scale on a question assessing belief in God—a more stringent criterion than in the first study. All other participants were classified as theists.

Procedure

Subjects followed the same procedure as in the first study, with a few notable exceptions. They were led to believe that subjects were alternately assigned to be givers and receivers and that they randomly happened to be givers, so that whatever decision they made would affect the following subject. Subjects in the control condition received a neutral prime; they completed the same scrambled-sentence task, but the scrambled sentences did not contain any target words that deliberately evoked a specific concept. Subjects in the secular-prime condition unscrambled sentences that contained the target words *civic*, *jury*, *court*, *police*, and *contract*. Subjects in the religious-prime condition unscrambled the same sentences as in Study 1.

At the end of the study, subjects completed demographic measures, including questions asking about their religiosity and belief in God. At the very end of the questionnaire, we asked the following two questions: (a) "Please briefly speculate on what you think this study was about so far," and (b) "Has there been anything that you do not understand or find odd about this study so far?" In addition, subjects were interviewed orally, and any suspicions expressed about the scrambled-sentences task were recorded.

Results and Discussion

Effect of Primes

The main effect from the first study was replicated. Subjects in the religious-prime condition offered an average of \$4.56, whereas those in the control condition offered \$2.56, a \$2.00 difference, $t(48) = 2.47, p < .02, p_{\text{rep}} = .93, d = 0.71$. Perhaps because of the more heterogeneous sample, there was much greater variance in the amount of money offered than there was in the first study (see Fig. 2). Note that as in Study 1, the religious prime shifted the modal response from selfishness to fairness. A higher proportion of subjects behaved selfishly (offering nothing) in the control condition (40%) than in the religious-prime condition (12%), whereas a higher proportion behaved fairly (offering exactly \$5) in the religious-prime condition (44%) than in the control condition (28%), $\chi^2(1, N = 31) = 4.40, p = .036, p_{\text{rep}} = .90$.

Unlike in the first study, there was a weak religiosity-by-prime interaction in this sample, $F(1, 46) = 2.22, p = .14, p_{\text{rep}} = .78$, indicating that the effect of the religious prime appeared to be stronger among theists than among atheists; the effect for atheists only was in fact nonsignificant, $t < 1$. We consider this inconsistency between the studies more fully in the General Discussion. Again, in the control condition, atheists did not differ from theists ($t < 1$). Self-reported belief in God, as a continuous measure, was not a good predictor of how much money subjects offered in the neutral-prime, control condition, $r(25) = -.12, p = .58, p_{\text{rep}} = .50$.

The secular prime had nearly as large an effect as the religious one. Subjects who received the secular prime left, on average, \$4.44, or \$1.88 more than those in the control condition, $t(48) = 2.29, p < .03, p_{\text{rep}} = .92, d = 0.67$.

Suspicion Probe

The key question was whether subjects reported any awareness that words in the unscrambled-sentences task reminded them of religious concepts or that this reminder was somehow related to the economic decision-making task. As in past research using this and related priming procedures (for reviews, see Bargh & Chartrand, 1999; Fazio & Olson, 2003), the vast majority of subjects did not report any awareness of this connection. In response to the probe questions, only 3 subjects (2 in the control condition and 1 in the secular-prime condition) mentioned

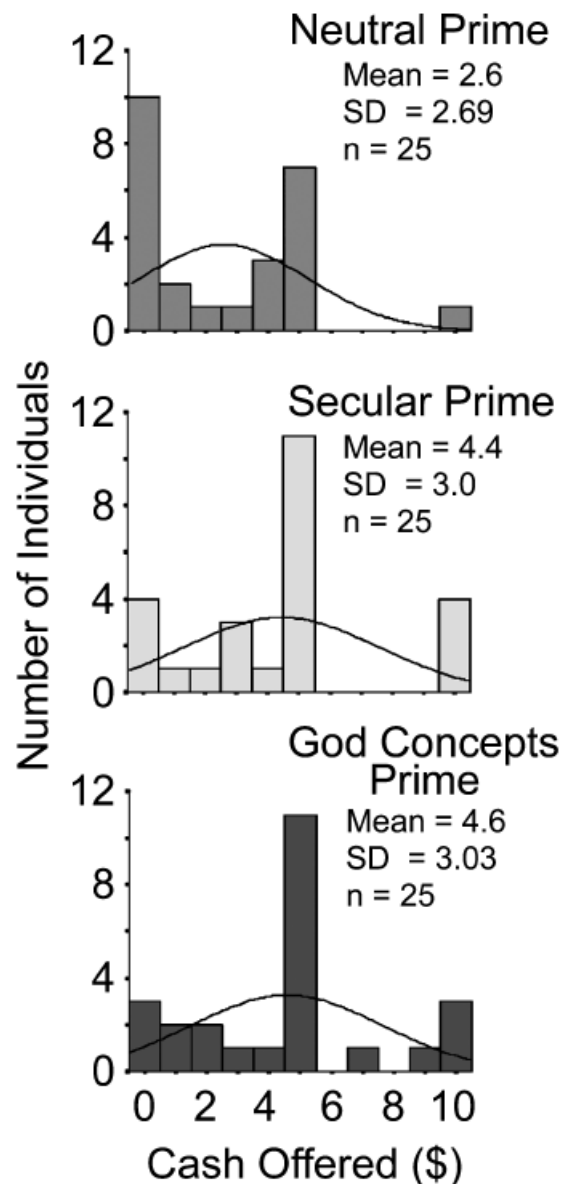


Fig. 2. Frequency distribution of money offered in the neutral-prime, secular-prime, and religious-prime conditions of Study 2.

anything related to the experimental question of how religious concepts are related to generosity, and these subjects were dropped from analysis. Five subjects (2 in the religious-prime condition, 2 in the control condition, and 1 in the secular-prime condition) mentioned religion in general, vague terms in their probe responses. We decided to retain these 5 subjects in our analyses. We found that neither excluding these 5 subjects nor including the 3 who were dropped had any effect on the final results. Furthermore, these 8 subjects who mentioned religion at all were distributed across all three conditions (in fact, the majority were in the control and secular-prime conditions). This suggests that their references to religion were not due to the priming procedure; more likely, a few subjects mentioned religion because the suspicion probes followed immediately after

demographic questions, which included questions about self-reported religiosity.

These findings on suspicion are consistent with the literature showing that priming categories, goals, and emotions using the method employed in our study, as well as other, related methods, affects behavior, even for the vast majority of subjects who report no awareness of the prime (e.g., Bargh, Chen, & Burrows, 1996). Taken together, the facts point to the conclusion that our main findings cannot be explained away by the priming procedure and demand characteristics.

Discussion

This study demonstrates, then, that the prosocial effect of our religious prime is not limited to college students, but is in fact robust across a much more diverse sample. Moreover, given that a neutral prime was used in the control condition, and the suspicion probe revealed little reflective awareness of the religious nature of the prime, we can rule out the possibility that the effect of religious concepts on prosocial behavior was an artifact of the priming procedure itself or was a by-product of demand characteristics. Finally, we showed that implicit activation of concepts related to secular moral institutions restrained selfishness as much as did religious suggestion.

GENERAL DISCUSSION

God concepts, activated implicitly, increased prosocial behavior even when the behavior was anonymous and directed toward strangers. God concepts had as much effect in reducing selfishness as did concepts that activated a secular social contract, and the effect size was quite large. The results regarding how much God concepts affected atheists were, however, inconclusive. The first study demonstrated a clear effect for atheists, but this effect all but disappeared in the second study. Although further investigation is needed, we speculate that the inconsistency may have been due to our stricter definition of atheism in the second study. It is conceivable that avowed atheists, unlike other nonreligious people, doubt the existence of supernatural agents even at the implicit level. We leave these questions about atheism open for future investigation. In the meantime, we examine potential explanations for the effect we did find among the majority of our subjects.

Possible Explanations

Prosocial behavior can be influenced by increased positive or negative mood (Schaller & Cialdini, 1990), or by increased feelings of empathic concern (Eisenberg & Miller, 1987). It is conceivable that the religious primes increased prosocial behavior by acting via these mechanisms. However, in a follow-up study (Shariff & Norenzayan, 2006) in which we measured self-reported positive and negative affect (Watson, Clark, & Tellegen, 1988) and dispositional empathy (Davis, 1983) immediately after subjects were primed, we found no evidence for

these mechanisms. Subjects who had received the religious prime reported neither increased positive or negative mood nor increased empathic concern.

Two possible theoretical explanations for the effect of the religious prime on prosocial behavior remain to be explored in the future. One is a behavioral-priming, or ideomotor-action, account based on the fact that the activation of perceptual-conceptual representations increases the likelihood of goals, plans, and motor behavior consistent with those representations (Bargh et al., 1996). Supernatural concepts such as “God” and “prophet” can refer to moral actors semantically and dynamically associated with acts of generosity and charitable giving. Irrespective of any attempt to manage their reputations, subjects may have automatically behaved more generously when these concepts were activated, much as subjects are more likely to interrupt a conversation when the trait construct “rude” is primed, or much as university students walk more slowly when the “elderly” stereotype is activated (Bargh et al., 1996).

Another possible explanation is that the religious prime aroused an imagined presence of supernatural watchers, and that this perception then increased prosocial behavior (for similar observations about supernatural concepts, see Bering, 2006, and Boyer, 2001). Although religions vary profoundly, central to all faiths is the idea of one or more omnipresent and omniscient moralizing agents who defy death, ignorance, and illusion; who demand costly sacrifice; and who arbitrate behavior in groups (Atran, 2002; Atran & Norenzayan, 2004; Norenzayan & Hansen, 2006). Generosity in cooperative games has been shown to be sensitive to even minor changes that compromise anonymity and activate reputational concerns (Haley & Fessler, 2005; Hoffman et al., 1994). Debates continue as to whether or not cooperative behaviors toward unrelated individuals, especially behaviors driven by passionate commitment, exist independent of short-term self-interest (e.g., Gintis, Bowles, Boyd, & Fehr, 2003). However, reputation management can go a long way in explaining the evolutionary stability of cooperative behavior between strangers, to the extent that selfish individuals are detected and subsequently excluded from future cooperative ventures.

A recent experiment (Haley & Fessler, 2005) found that even as subtle a cue as stylized eyespots on a computer background increased the amount of money that was offered in the dictator game. Similarly, an image of a pair of eyes increased money contributions to an “honesty box” used to collect money for drinks in a university lounge (Bateson, Nettle, & Roberts, 2006). If the mere presence of eyespots could increase generosity, it is very plausible that rousing belief in a supernatural watcher could produce similar effects, as was shown in an experiment by Bering et al. (2005) in which the belief that a dead graduate student’s ghost resided in the testing room reduced cheating. In sum, we are suggesting that activation of God concepts, even outside of reflective awareness, matches the input conditions of an agency detector and, as a result, triggers this hyperactive

tendency to infer the presence of an intentional watcher. This sense of being watched then activates reputational concerns, undermines the anonymity of the situation, and, as a result, curbs selfish behavior.

There is no reason why only one of these mechanisms need be responsible for the effect of God concepts on prosocial behavior. Religious sentiments have been culled and honed through hundreds of generations and may rely on multiple psychological mechanisms (Dennett, 2006), a possibility we leave open for exploration in future research.

Religion and the Origins of Civilization

There has been much speculation about why the emergence of religious iconography coincided with a rapid increase in population densities (Cauvin, 1999). It is possible—even likely—that early religions greatly facilitated population growth. Prior to around 12,000 years ago, group sizes remained small—limited by the threat of nonreciprocating defectors (Axelrod, 1984). A social group was restricted to genetically related individuals, bound by kin selection (Hamilton, 1964), and a handful of recognizable neighbors, bound by reciprocal altruism (Trivers, 1971). Theorists of religion, from Durkheim to Rappaport, have commonly attributed religion's socially cohesive effects to collective participation in costly ritual, rather than to belief in supernatural agents (see Sosis & Alcorta, 2003, for a discussion). However, in the present studies, we have found evidence that the invocation of supernatural agents may have played a central role. If the cultural spread of supernatural moralizing agents expanded the circle of cooperation to unrelated strangers, it may well have allowed small groups to grow into large-scale societies, from the early towns of Jericho and Ur to the metropolises of today.

One evolutionary explanation for our results invokes group selection. That is, ancestral societies with culturally widespread God concepts would have outcompeted societies without such concepts, given the cooperative advantage of believing groups (Wilson, 2002). However, group-selection accounts of religion, and altruistic behavior in general, although plausible in principle, face a number of well-known theoretical and empirical challenges (e.g., Atran, 2002). One does not have to appeal to group-selectionist arguments to explain why the likelihood of generosity increases when God concepts become cognitively accessible. As we have discussed, another plausible scenario centers on responsiveness to reputational concerns. These concerns—naturally selected because they ultimately maximized individual fitness in social groups (e.g., Bateson et al., 2006; Haley & Fessler, 2005)—could be activated by the perceived presence of any intentional, moralizing agents.

An Experimental Procedure to Measure the Effects of God Concepts

Religions are widespread elements of all societies and deeply affect the lives of most people in most societies. Yet scientific

understanding of religion's impact on psychological processes remains poor. Implicit primes of concepts, goals, and affective states have been fruitfully used in social psychology in a wide range of domains (see Bargh & Chartrand, 1999). Similar causal and unobtrusive priming of God concepts has a number of potentially useful applications. This experimental procedure facilitates the measurement of the causal effect of specific religious concepts on people with a wide variety of explicit beliefs—theists and atheists alike, and everyone in between. Because priming operates largely outside of explicit awareness, subjects are less likely to respond to demand characteristics or to consciously revise their behaviors and beliefs in a priming paradigm than in a procedure with a manipulation that is more apparent to them. The priming technique can be readily and interestingly applied to study how religion affects prosocial behavior (Batson et al., 1993), moral intuitions (Cohen & Rozin, 2001), teleological reasoning (Kelemen, 2004), and prejudice (Allport & Ross, 1967). An experimental procedure activating religious concepts implicitly can be an important complement to other research designs, contributing to the growing efforts of cognitive and social scientists toward developing a natural science of religion.

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