Journal of Personality and Social Psychology
2012, Vol. 102, No. 1, 4–21

© 2011 American Psychological Association
0022-3514/11/$12.00 DOI: 10.1037/a0025971

Divergent Effects of Activating Thoughts of God on Self-Regulation

Kristin Laurin
University of Waterloo

Aaron C. Kay and Gráinne M. Fitzsimons
Duke University

Despite the cultural ubiquity of ideas and images related to God, relatively little is known about the effects of exposure to God representations on behavior. Specific depictions of God differ across religions, but common to most is that God is (a) an omnipotent, controlling force and (b) an omniscient, all-knowing being. Given these 2 characteristic features, how might exposure to the concept of God influence behavior? Leveraging classic and recent theorizing on self-regulation and social cognition, we predict and test for 2 divergent effects of exposure to notions of God on self-regulatory processes. Specifically, we show that participants reminded of God (vs. neutral or positive concepts) demonstrate both decreased active goal pursuit (Studies 1, 2, and 5) and increased temptation resistance (Studies 3, 4, and 5). These findings provide the first experimental evidence that exposure to God influences goal pursuit and suggest that the ever-present cultural reminders of God can be both burden and benefit for self-regulation.

Keywords: God, religion, self-regulation, self-control, goal pursuit

More than 90% of people in the world agree that God or a similar spiritual power exists or may exist (Gallup International, 1999). Although people's specific beliefs about God vary, the conception of God as a powerful supernatural force is consistent across cultures and religions (Atran & Norenzayan, 2004). Importantly, regardless of whether people believe in God, nearly everyone is frequently exposed to images and ideas related to God. Thus, although the existence of God can be debated, God's ubiquity as a cultural notion cannot. The present set of studies aimed to investigate how exposure to this important cultural concept may shape self-regulation. Specifically, we sought to examine how reminders of God affect the success with which, and the means by which, people pursue goals.

Religion, broadly defined, relates to a diverse range of psychological outcomes. Certain religious beliefs or practices can help people cope with aversive circumstances such as uncertainty, randomness, and reduced personal control (Kay, Gaucher, McGregor, & Nash, 2010; Kay, Gaucher, Napier, Callan, & Laurin, 2008; Laurin, Kay, & Moscovitch, 2008); with their own mortality (Vail et al., 2010); and with stressful life events (Newton & McIntosh, 2010). Some religious beliefs and practices are also associated with greater well-being (Myers, 2000; Whittington & Scher, 2010) and with better mental and physical health (Hill & Pargament, 2003). Religion can assist in creating cohesive moral communities (Graham & Haidt, 2010) and can lead people to behave more prosocially (Randolph-Seng & Nielsen, 2007; Shariff & Norenzayan, 2007). On the negative side, religion can also make people behave more prejudicially (Allport & Ross, 1967; Hall, Matz, & Wood, 2010).

Because little experimental research exists in this area, evidence of the causal role of religious beliefs and practices is scarce. Furthermore, of the research that does exist, most examines the effects of religiosity—measures of frequency of prayer or attendance at religious services, or the importance people attribute to their religion (Hackney & Sanders, 2003)—rather than exposure to the concept of God. As a result, little is known about how or if simple incidental exposure to the concept of God affects individuals' thoughts and behavior.

Recently, however, two distinct programs of research employing experimental designs have found clear evidence for a causal influence of exposure to God representations. In one set of studies, participants experimentally reminded of God via a priming methodology subsequently behaved more prosocially (Shariff & Norenzayan, 2007), sharing more money with anonymous strangers. In another study, participants subliminally primed with God experienced a reduced sense of personal agency, attributing less agency to themselves and more agency to a computer against which they were competing (Dijksterhuis, Preston, Wegner, & Aarts, 2008).

In the current set of studies, we examine how exposure to God influences self-regulation. *Self-regulation*, or the diverse set of processes through which the self alters its own responses or inner states in a goal-directed manner (see Baumeister, Vohs, & Tice, 2007), is a profoundly important topic of social psychological study, with implications for physical and mental health (Wrosch, Dunne, Scheier, & Schulz, 2006), educational achievement (McClelland et al., 2007), relationship quality (Finkel & Campbell, 2001), and general well-being (Ryan & Deci, 2000). Existing research in the self-regulation domain has focused primarily on the individual differences and within-person psychological states that promote successful self-regulation, such as the ability to delay gratification (Mischel, Shoda, & Rodriguez, 1989), certain lay theories about success and failure (Dweck, Chiu, & Hong, 1995), and self-regulatory

This article was published Online First October 24, 2011.

Kristin Laurin, Department of Psychology, University of Waterloo, Waterloo, Ontario, Canada; Aaron C. Kay and Gráinne M. Fitzsimons, Fuqua School of Business, Duke University.

Correspondence concerning this article should be addressed to Kristin Laurin, University of Waterloo, Department of Psychology, 200 University Avenue West, Waterloo, Ontario, Canada N2L 3G1. E-mail: klaurin@uwaterloo.ca

strength (Tangney, Baumeister, & Boone, 2004). More recently, however, there has been a growing interest in understanding the social and situational factors that may affect self-regulation (Baumeister, DeWall, Ciarocco, & Twenge, 2005; Fitzsimons & Bargh, 2003), and we now know that extra-personal characteristics of the social world—ranging from significant others to material objects to brand logos—can strongly influence goal-directed behavior (Fitzsimons & Finkel, 2010). In the current work, we examine a novel external influence on self-regulation: exposure to the concept of God. Given that allusions to God occur frequently[1] in contemporary media, art, literature, and everyday conversation, the extent to which, and the way in which, they shape self-regulation is important to understand.

Self-Regulation: Active Goal Pursuit Versus Temptation Resistance

Self-regulation is a multifaceted construct, and we suggest that reminders of God will elicit different effects on different aspects of self-regulation. Specifically, we propose that reminders of God have opposing effects on two important components of self-regulation: *active goal pursuit* and *temptation resistance*. These components are essential to successful self-regulation and are key elements in most theories of self-regulation. Before we outline our hypotheses, we briefly define these components.

On the basis of existing literature, we define active goal pursuit as actively engaging in goal-directed behavior; in other words, active goal pursuit occurs when goal pursuers instigate an action that moves them toward the goal object (or end-state), minimizing the discrepancy between the current state and the desired state (Carver & Scheier, 1982). For an individual with a weight-loss goal, for instance, exercising and buying a healthy cookbook are examples of active goal pursuit. Both are actions that aim to minimize the distance between the current state (one's current weight) and the goal state (one's desired weight).

This definition of active goal pursuit is consistent with many classic theories of motivation. Gollwitzer and colleagues' analysis of goal pursuit suggests that goal attainment first requires "getting started with goal striving," defined as "executing relevant goal-directed responses" (Achtziger, Gollwitzer, & Sheeran, 2008, p. 382; Gollwitzer & Oettingen, 2011), which include "remembering to act," "seizing the opportunity to act," and "overcoming an initial reluctance to act" (Gollwitzer & Sheeran, 2006, pp. 75–76), features that fit well with our definition of active goal pursuit. Likewise, according to Heckhausen's (1991) model of action phases, the key task that signals completion of the preactional phase is the successful initiation of goal-directed behavior. Finally, Trope and Fishbach (2000; also see Fishbach & Trope, 2005), in their model of counteractive self-control, suggested that successful self-regulation requires overcoming the short-term costs of actively engaging in goal-directed behavior. For example, one must expend time and effort on the unpleasant task of studying for an exam if one hopes to meet a long-term goal of achieving a good final grade in a course. Thus, active goal pursuit, or executing behaviors that promote goal attainment, is considered an important component of successful self-regulation.

In line with previous literature, we define *temptation resistance* as refraining from behaving in ways that derail goal pursuit: In other words, temptation resistance occurs when goal pursuers ignore, inhibit, or distract themselves from stimuli that would push them further away from the goal object. Thus, for the individual with the weight-loss goal, whereas exercising is an example of active goal pursuit, refraining from eating a high-calorie dessert might be an example of temptation resistance. This definition also fits well with several classic theories of motivation. Gollwitzer and colleagues' analysis of goal pursuit suggests that goal attainment requires initiating not only goal striving but also goal shielding, or "abstaining from performing antagonistic attention and behavioral responses" (Bayer, Gollwitzer, & Achtziger, 2010, p. 505; Gollwitzer & Sheeran, 2006). Similarly, a key task in the actional phase of Heckhausen's (1991) model of action phases is to protect goal pursuit from distractions and temptations that could potentially derail it. Finally, another challenge to successful goal pursuit identified by the model of counteractive self-control (Fishbach & Trope, 2005; Trope & Fishbach, 2000) arises when an action would have short-term benefits (e.g., the pleasure of socializing with friends the night before an exam) but long-term costs (e.g., a poor final grade). In these situations, a goal pursuer must resist a temptation. Thus, temptation resistance is considered a second important component of successful self-regulation (Mischel et al., 1989).

Under most circumstances, these two elements of self-regulation—active goal pursuit and temptation resistance—likely vary in tandem as a function of motivation and other factors that influence self-regulation, broadly speaking. That is to say, the stronger a person's motivation to lose weight, for example, the more that person should exercise and the more that person should refrain from eating high-calorie desserts. Indeed, some tasks inherently require both active goal pursuit and temptation resistance: In preparing for an important exam, people can actively read their textbook and prepare study notes only if they avoid reckless parties and excessive socializing. Given that active goal pursuit and temptation resistance often vary together and facilitate one another, it makes good sense that most research programs consider them roughly analogous measures of goal striving (Fishbach & Shah, 2006; Gollwitzer & Sheeran, 2006).

We believe, however, that many goal-relevant tasks differ in the extent to which they require active goal pursuit versus temptation resistance. To return to the examples we have used above, although most tasks involved in weight loss likely require at least some active goal pursuit and some temptation resistance, exercise should primarily require the former, and refusing high-calorie desserts should primarily require the latter.

In the present research, we plan to make use of tasks where active goal pursuit and temptation resistance are decoupled to test the hypothesis that reminders of God will have divergent effects on these two facets of self-regulation. Specifically, we propose that although exposure to God representations can undermine active

[1] In word frequency lists, *God* appears as one of the most common words in the English language (e.g., God is the 159th most frequent word and the 11th most frequent noun in a list of words based on the 33,000 books available online via Project Gutenberg; "Wiktionary: Frequency Lists," 2011). Based on this evidence, it seems reasonable to suggest that most people are regularly exposed to the concept of God.

goal pursuit, it can also bolster temptation resistance. We lay out each of these twin hypotheses in turn in the sections below.

God and Active Goal Pursuit

First, we propose that reminders of God will decrease people's active goal pursuit. Most Western cultural representations of God include the idea that God is omnipotent and controlling. Religious scholars agree that God's omnipotence is a widely endorsed tenet of Western monotheistic faiths (Kapitan, 1991; Lawrence, 1997; Metcalf, 2004; Newton & McIntosh, 2010). In addition, several recent psychological findings also suggest that omnipotence is a commonly endorsed feature of God. For example, participants asked to a rate number of entities, including rocks, gadgets, people of different ages, and supernatural beings, along various dimensions deemed God as the ultimate agent—a being solely dedicated to agency (H. M. Gray, Gray, & Wegner, 2007; see also K. Gray & Wegner, 2010).

In addition, experimental work has shown that, when confronted with events that are difficult to explain, people readily turn to God's omnipotence (Gilbert, Brown, Pinel, & Wilson, 2000; K. Gray & Wegner, 2010). Moreover, empirical investigations of Kay et al.'s (2008) model of compensatory control have demonstrated that people in cultures across the globe tend to view God as a crucial contributing factor to the events that unfold in their lives, especially when the need for explanation is heightened (Kay et al., 2008; Kay, Shepherd, Blatz, Chua, & Galinsky, 2010; Laurin et al., 2008). Research has also shown that because Christians believe in God, they are more likely to attribute improbable events to fate and to endorse the principle of equifinality—that is, to believe that events that take place would have occurred no matter what had preceded them (Norenzayan & Lee, 2010). In other words, believing in a Christian God is associated with believing that events in the universe operate according to some predetermined plan that cannot be altered through human action. Thus, although specific religions may differ in the extent to which they truly ascribe omnipotence to God in their sacred texts, lay conceptions of the construct of "God" generally include this feature, and people appear to conceive of God as an agent whose preordained plan makes their own actions less impactful.

Because God is so often viewed as an omnipotent and controlling being, we suggest that for many individuals, thinking about God will undermine their motivation to actively pursue goals themselves. Our reasoning is consistent with two dominant theoretical perspectives on self-regulation. According to the theory of planned behavior (Ajzen, 1985), when people feel less control over their actions, they have weaker goal intentions and are consequently less likely to engage in goal-directed behavior. For instance, students who feel less control over their ability to receive an A grade in a course have weaker intentions to receive an A, which ultimately reduces the probability that they do the work required to obtain this grade (Ajzen & Madden, 1986). In other words, students who feel less control over their ability to receive an A grade don't actively pursue this goal as much as students who feel more control. Thus, given that believing in God is associated with believing that human actions cannot alter fate's plan (Norenzayan & Lee, 2010) and that reminding people of God reduces their sense of personal agency and control over their actions (Dijksterhuis et al., 2008), we posit that reminders of God should also reduce their active goal pursuit. Students exposed to God should feel less control over their ability to get an A, which should then make them less likely to engage in behavior directed toward achieving this goal.

Our prediction is also consistent with research on social loafing, which has shown that individuals tend to exert less effort when the responsibility for their outcomes is shared with others (Karau & Williams, 1993; Kerr, 1983; Latané, Williams, & Harkins, 1979; Olson, 1965). Many theoretical explanations for social loafing effects (e.g., Karau & Williams, 1993; Shepperd, 1993) draw on expectancy-value models of effort (Heckhausen, 1977; Porter & Lawler, 1968; Vroom, 1964) to argue that individuals exert less effort when working with others because they perceive their efforts as less instrumental in producing their desired outcomes. In other words, people work less hard when they feel that their outcomes are contingent not only on their own but also on others' decisions and behaviors. To return to the example of getting an A grade, students should work harder on a group project if they know their grade depends on their own contributions and less hard if they know their grade will reflect the work of the group as a unit. Thus, when exposed to the idea of God, a being who may influence their outcomes, we posit that individuals should be less willing to engage in active goal pursuit to obtain these outcomes.

Because God is widely perceived as an omnipotent being, therefore, who is partially in control over and responsible for people's outcomes, we hypothesize that reminding people of God should make them less motivated to work hard to achieve their goals and desired end-states.

God and Temptation Resistance

We do not, however, believe that reminders of God will have uniformly negative outcomes for self-regulation. On the contrary, when temptation resistance, rather than active goal pursuit, is the more salient aspect of self-regulation required for a specific task, we propose that reminders of God will *increase* self-regulation. Representations of God—across cultures—tend to include the idea that God is omniscient, watching and judging all people's behavior (Kapitan, 1991; Metcalf, 2004; Nagasawa, 2003; Norenzayan & Shariff, 2008). Indeed, even 5-year-old children—both religious and secular—describe God as a being who sees things inapprehensible to human senses (Giménez-Dasí, Guerrero, & Harris, 2005). This may explain why reminding people of God causes them to feel evaluated (Gervais & Norenzayan, 2009, as cited in Norenzayan, Shariff, & Gervais, 2009).

We suggest that people should be likelier to resist temptations when in the psychological presence of this evaluative, ever-watching, omniscient God. Because people want to earn and maintain positive regard, they are particularly motivated to avoid misbehaving when in the presence of others (Baldwin & Holmes, 1987; Leary, 1995). According to theory (Latané, 1981) and empirical findings (e.g., Dahl, Manchanda, & Argo, 2001), simply the *imagined* presence of witnesses to one's behavior can be just as impactful as their actual presence. Bering (2006) has argued that even invisible agents like Santa Claus can serve as "witnesses" to behavior that may enable children to resist temptations. Adults are also less likely to succumb to selfish impulses when primed with the concept of other people (e.g., Stapel, Joly, & Lindenberg, 2010) or made to think of the ghost of a deceased person (e.g.,

Bering, McLeod, & Shackelford, 2005), and they are less likely to steal when exposed to the image of a pair of eyes (Bateson, Nettle, & Roberts, 2006).

An omniscient God should also reduce feelings of anonymity, which can motivate people to avoid misbehaving (Zhong, Bohns, & Gino, 2010). When left alone with a bowl of candies and instructed to take only one, trick-or-treating children stole fewer candies if the house owner had asked them for identifying details such as their name and home address (Beaman, Klentz, Diener, & Svanum, 1979; Diener, Fraser, Beaman, & Kelem, 1976). Among adults, temptation resistance is lower in dimly lit surroundings. Participants in a dimly lit room, for instance, cheated more on a task in which they could earn money (Zhong et al., 2010). These latter effects were mediated by participants' sense of anonymity, suggesting that people may resist temptation less when they feel anonymous, and conversely, that people may resist temptation more when they feel identifiable.

Thus, because a watching, omniscient God can make people feel they are being watched and identified, and because this feeling can encourage people to avoid misbehaving, we hypothesize that reminders of God will make people more motivated to resist the temptations that can derail goal pursuit. Some support for this second hypothesis comes from a substantial body of evidence—covered in two review articles—suggesting that religious involvement is positively associated with temptation resistance and self-control (see Koole, McCullough, Kuhl, & Roelofsma, 2010; McCullough & Willoughby, 2009). For instance, more religious families produce children who have better control over their impulses (Bartkowski, Xu, & Levin, 2008), and individuals who are more religious are better at distancing themselves from tempting alternatives to their current romantic partner (Worthington et al., 2001).

In the current research, the studies testing this (our second) hypothesis extend these findings in several ways. First, whereas the research mentioned above has studied religiosity or involvement in religious practice, we focus on exposure to the cultural representation of God. Presumably, the current research may connect with the findings described above in that people who are more religious or who practice religion more regularly may more frequently encounter reminders of God. Most interpretations of the findings above, however, assume that it is the complex social and behavioral elements of religion (as opposed to the mere cognitive accessibility of God) that drive the religion–temptation resistance link. For example, McCullough and Willoughby (2009) reviewed evidence that involvement with a religious community and participation in religious rituals foster self-monitoring and as a result lead to improved self-control. In our research, we examine short-term influences on self-regulation of fleeting reminders of the cultural concept of God, as a complement to prior research's focus on the long-term influences of a lifetime of religious participation.

Second, the existing evidence for the link between religion and temptation resistance is correlational (with a few exceptions, e.g., Fishbach, Friedman, & Kruglanski, 2003, Study 2). Although this correlational work is consistent with our hypothesis that reminders of God enable temptation resistance, alternative explanations for this apparent link also make intuitive sense. For instance, religious belief and temptation resistance might share variance with a third variable, which could explain their apparent connection. Conscientiousness is one such variable, which is positively associated with both religiosity (Saroglou, 2002; Taylor & MacDonald, 1999) and temptation resistance (Jensen-Campbell & Graziano, 2005). In the current article, we test for experimental effects of exposure to God on temptation resistance.

Third, virtually all measures used in research on religion and temptation resistance assess avoidance of tempting behaviors that *religious or moral standards* deem to be wrong. For example, more religious individuals show greater ability than less religious individuals to resist temptations in the realms of sexual fidelity, honesty, and generosity (see McCullough & Willoughby, 2009). Conversely, in our research, we predict that reminding people of God will make them more likely to resist temptations with respect to not only morality- and religion-based goals but to whatever their active goals happen to be at that time.

To be sure, reminders of God may activate certain morality- or religion-based goals, such as honesty. For instance, reminding a sticky-fingered electronics store customer of God may lead her to activate an honesty goal and thus construe theft as a "temptation" or "misbehavior" and avoid shoplifting the DVD of the latest Adam Sandler movie because shoplifting is immoral. However, we propose that if that same customer also has an active goal to practice playing piano in the evenings, and therefore construes the latest Adam Sandler movie itself as a "temptation" that needs to be avoided, then reminding her of God will also encourage her to resist the temptation of purchasing this mindless distraction.

Hypotheses and Overview

We present research testing the two following hypotheses regarding the influence of reminders of God on self-regulatory processes: Reminders of God can (a) hinder self-regulation, by reducing people's active engagement in goal pursuit, but also (b) facilitate self-regulation, by increasing people's temptation resistance. To investigate these twin hypotheses—that reminders of God may both hinder and facilitate goal pursuit—we conducted six experiments that exposed participants to the construct of God and then assessed performance on various measures of self-regulation.

In Studies 1, 2, and 6, we assessed performance on measures that emphasized active goal pursuit. In Studies 3, 4, 5, and 6, we assessed performance on measures that emphasized temptation resistance. To provide evidence of mechanism, we also examined the extent to which individual differences in conceptions of God (Studies 2 and 5) and different emphases in the God priming manipulations (Study 6) moderated these findings in theoretically consistent ways.

Prior to each study, we also collected information about participants' religiosity. However, because our hypotheses are specific to precise features of God, and because we measure or manipulate these features in each of our studies, we made no predictions as to whether religiosity would moderate the effects of God primes on self-regulation. If anything, on the basis of past research (e.g., Shariff & Norenzayan, 2007), we suspect that our effects will occur irrespective of participants' religiosity.

Study 1

The first two studies investigated whether reminders of God would decrease participants' active goal pursuit. In Study 1, participants were primed (Bargh & Chartrand, 1999) with either God

concepts, neutral concepts, or positive concepts. Next, they completed a task that purportedly predicted career success. We predicted that participants reminded of God would perform less well on the task, reflecting reduced active goal pursuit.

We operationalized active goal pursuit as task performance because good performance on this task required simply that participants instigate effortful behavior related to their career goal; this is the defining feature of active goal pursuit (Achtziger et al., 2008; Gollwitzer & Oettingen, 2011; Gollwitzer & Sheeran, 2006; Heckhausen, 1991). Prior research has shown that participants who expend more effort on this task achieve greater performance (Shah, 2003), and it has been repeatedly used as evidence for the activation and pursuit of an achievement goal (Fitzsimons & Bargh, 2003; Shah, 2003); thus, we take performance on this task to be a good measure of engaging in active goal pursuit. However, because we sought to avoid inadvertently tapping temptation resistance—which we hypothesize should be positively affected by God primes—we conducted a pilot test that assessed how a separate sample from the same student population viewed the task. As described below, pilot testing confirmed that people view performance on this task as reflecting active goal pursuit and not temptation resistance.

Method

Participants. Thirty-seven engineering students participated in a study described as "the engineering skills study" in exchange for partial course credit. To ensure meaningful results on the dependent measure (word generation), we recruited only individuals who had learned English before the age of 10. Demographics (age, gender, ethnicity, and religious affiliation) for all samples are presented in Table 1. None of these variables moderated any of the findings presented here. We return to this point in the General Discussion.

Procedure. Participants first completed a priming procedure (Srull & Wyer, 1979), described as a warm-up task. They formed grammatically correct sentences using four words from sets of five. In the God condition, five of the 10 sets contained a word semantically related to the concept of God (*divine*, *God*, *sacred*, *spirit*, and *prophet*; taken from Shariff & Norenzayan, 2007). In the positive condition, five of the 10 sets contained a positively valenced word (*sun*, *flowers*, *puppy*, *beautiful*, and *party*). All words in the neutral condition were neutral. We included the positive condition to ensure that any effects of the God condition could not be attributed to the inherently positive nature of the God-themed words.

Participants learned that their next task was highly relevant to their career aspirations in the engineering field, as performance on it strongly predicted future engineering success. Participants then learned that good performance on the task required them to form as many words as possible in 5 min, using any combination of the letters *R*, *S*, *T*, *L*, *I*, *E*, and *A*. We considered the total number of words generated as our measure of performance. A small percentage (3.19% overall) of words generated were either not English words or were duplicates; we obtained identical results whether we included or excluded those words. This report presents analyses using the total number of words generated.

Finally, participants completed a funnel debriefing procedure (Bargh & Chartrand, 2000). No participant indicated noticing the contents of the priming task nor reported any relation between the task and their performance on the dependent measure. Several weeks prior to the experimental session, as part of a questionnaire battery, participants had rated how religious they considered them-

Table 1
Participant Demographics for all Studies

Variable	Study 1	Study 2	Study 3	Study 4	Study 5	Study 6
Age in years, *M*	20.0	19.7	20.3	18.5	18.9	20.0
Gender, *n* (%)						
Female	12 (32)	17 (25)	23 (74)	15 (65)	21 (68)	96 (62)
Male	25 (68)	52 (75)	8 (26)	8 (35)	9 (29)	58 (38)
N/A	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)
Race/ethnicity, *n* (%)						
African Canadian		1 (1)	1 (3)			5 (3)
Arabic	2 (5)	1 (1)	1 (3)	1 (4)	2 (6)	4 (3)
Caucasian	14 (38)	33 (48)	10 (32)	7 (30)	9 (29)	62 (40)
East or Southeast Asian	15 (41)	17 (25)	11 (35)	7 (30)	11 (35)	66 (43)
Hispanic				1 (4)		
Native Canadian				2 (9)		2 (1)
South Asian	5 (14)	16 (23)	6 (16)	5 (22)	7 (23)	12 (8)
Other or not applicable	1 (3)	1 (1)	2 (6)		2 (6)	3 (2)
Religious affiliation, *n* (%)						
Agnostic	2 (5)	4 (6)	2 (6)	1 (4)		7 (5)
Buddhist		1 (1)		1 (4)	1 (3)	6 (4)
Christian	12 (32)	24 (35)	15 (48)	7 (30)	12 (39)	75 (49)
Hindu	2 (5)	11 (16)	2 (6)	3 (13)	2 (6)	2 (1)
Jewish		1 (1)			1 (3)	
Muslim	2 (5)	1 (1)	3 (10)	1 (4)	3 (10)	14 (9)
Sikh		1 (1)		1 (4)	1 (3)	2 (1)
Other religion		2 (3)	2 (6)			4 (3)
Atheist/no religion	19 (51)	22 (32)	7 (23)	9 (39)	11 (36)	44 (29)
N/A	0 (0)	2 (3)	0 (0)	0 (0)	0 (0)	0 (0)

selves using a 5-point scale (1 = *not at all religious*, 2 = *a little religious*, 3 = *somewhat religious*, 4 = *quite religious*, or 5 = *very religious*).

Results and Discussion

Premeasure of task relevance. To determine whether participants saw the anagrams task as requiring them to actively pursue the goal—rather than resist temptations—we conducted a pilot test with a separate sample of 24 participants. We described the task to these participants, along with its purported link to success in the engineering field, and asked them to rate how much the task would require active goal pursuit and temptation resistance for engineering undergraduates, using two 7-point scales ranging from 1 (*not at all*) to 7 (*very much*). Participants indicated that they thought good performance on the task would require more active goal pursuit ($M = 5.17$, $SD = 1.43$) than temptation resistance ($M = 3.04$, $SD = 1.99$), $t(23) = 5.43$, $p < .001$. When asked directly to indicate whether good performance on the task required active goal pursuit or temptation resistance, 92% of participants chose the former. Thus, students' lay beliefs coincided with our intuition about the task: Performance on the anagrams task tapped active goal pursuit significantly more so than temptation resistance.

Primary analyses. We predicted that participants reminded of God would be less motivated to actively pursue career goals and as a result would perform less well on the anagrams task. Consistent with this prediction, God-primed participants generated fewer words ($M = 19.5$, $SD = 8.01$) than did participants primed with positive ($M = 30.4$, $SD = 10.3$) or neutral concepts ($M = 30.3$, $SD = 13.0$), $F(2, 34) = 4.62$, $p < .02$. Least significant difference (LSD) post hoc tests revealed that the positive and neutral conditions did not differ from each other ($p > .99$), but both differed significantly from the God condition (God vs. positive: $p < .02$; God vs. neutral: $p < .02$). This decreased performance among the God-primed participants represents, to our knowledge, the first evidence that being reminded of God can hinder self-regulation.

Preexisting religiosity. We also sought to investigate whether the influence of the God primes on performance depended on participants' preexisting religiosity. First, we tested for an interaction between priming condition and preexisting religiosity. We conducted a hierarchical regression analysis to predict the number of words participants generated. In the first step, we entered religiosity (centered) and priming condition (two dummy codes) as predictors. In the second step, we entered the interaction terms. This second step failed to increase the variance explained by the regression, $\Delta R^2_{\text{interaction terms}} = .035$, $F(2, 31) < 1$, *ns*, indicating that preexisting religiosity did not moderate the effect of priming condition. Second, we subjected the number of words participants generated to an analysis of covariance using priming condition as the between-subjects factor and religiosity as the covariate. This analysis produced an effect of priming condition, $F(2, 33) = 4.64$, $p < .02$, virtually identical to the one described above. Thus, reminders of God led to reduced performance in a way that was independent of preexisting religiosity. This may be because the religiosity measure did not tap beliefs specific to God's role in controlling people's lives but rather general religious involvement (which can vary independently of specific beliefs about God; see Allport & Ross, 1967). Religiosity was measured in all of the remaining five studies but failed to moderate the effects in each case. We therefore do not report these analyses again in the proceeding studies but return to them in the General Discussion.

Study 2

Why would students reminded of God perform more poorly on a task related to their career achievement? We posit that God primes reduced students' active goal pursuit because the primes activated the idea of an omnipotent, controlling force that has influence over their outcomes (Gilbert et al., 2000; H. M. Gray et al., 2007; Kay, Gaucher, et al., 2010).

Study 2 aimed to test this idea by replicating the design of Study 1 and adding a premeasure of participants' beliefs about the influence of external factors on their engineering success. Study 1 found no evidence that religiosity moderated the findings of God reminders on self-regulation, but, as mentioned, this may be because general religiosity was simply not a precise enough measure. If this was indeed the case, then an individual difference measure that is designed to tap belief in the potential for external forces to control specific outcomes might moderate the influence of God primes on active goal pursuit. Although previous research suggests that virtually everyone's representation of God includes omnipotence (K. Gray & Wegner, 2010; Kapitan, 1991; Metcalf, 2004), people may vary in terms of the specific outcomes they see as susceptible to the influence of external forces. If so, we should be able measure the extent to which participants see a specific outcome—such as their career success—as susceptible to the influence of external forces like God. If, as we suggest, God primes reduce active pursuit of career goals because they prompt people to think of a being who can influence their career outcomes, then this effect should hold only to the extent that participants believe that their career goals are susceptible to external influence. Thus, Study 2's design included one manipulated variable (priming condition: God prime vs. neutral prime) and one measured variable (beliefs about external forces on career success).

One other feature of Study 2 is worth noting. The findings of Study 1 are vulnerable to an alternative interpretation: Namely, perhaps God primes shifted priorities away from career goals (and toward less "materialistic" goals instead), minimizing their perceived importance. If individuals temporarily felt less motivated to pursue career goals, this would explain why they performed more poorly on the anagrams task. To examine this possibility, we included a standard measure of values (Schwartz, 1992) in Study 2, which would allow us to investigate any effects of God primes on the importance of common values.

Method

Participants. Sixty-nine engineering students participated in a study described as "the engineering skills study" in exchange for partial course credit. To ensure meaningful results on the dependent measure (word generation), we recruited only individuals who had learned English before the age of 10.

Procedure. The procedure was identical to that of Study 1, with three exceptions. First, given that Study 1's positive condition proved redundant with the neutral condition, we eliminated it. Second, several weeks before the experimental session, we mea-

sured participants' beliefs about external influence on their career outcomes. Participants read that sometimes, people's outcomes can be determined by a combination of factors—some of which they themselves control and some of which they do not. We gave participants examples of factors they themselves control ("your personal efforts, actions, and attitudes") as well as examples of factors they do not ("people, beings, and forces beyond your control"). Participants then considered a number of different outcomes, including their success as engineers. They completed the sentence "My success as an engineer depends. . ." using a scale ranging from 1 (*almost exclusively on factors that I control*) to 7 (*almost exclusively on factors that I do not control*), where the midpoint (4) was labeled *equally on factors that I control and factors that I do not control*.

Third, at the end of Study 2 participants rated how much each of 10 values acted as a guiding principle in their lives, using a scale ranging from 1 (*not important*) to 9 (*of supreme importance*). The values, taken from extensive work by Schwartz (1992), were achievement, benevolence, conformity, hedonism, power, security, self-direction, stimulation, tradition, and universalism. These were measured so that we could examine any possible effects of priming condition on the relative value placed on achievement.

As in Study 1, participants completed a funnel debriefing procedure following the experimental session. None reported having noticed the semantic contents of the priming task, and none reported suspecting that the priming task was connected to the anagrams task.

Results and Discussion

Primary analyses. We predicted that the God prime would lead to reduced active goal pursuit, to the extent that participants endorsed the influence of external forces on career success. We tested this prediction in two ways. First, we treated participants' beliefs about external influence as a continuous variable in a regression. Second, because we suspected that crossing the midpoint of this scale may represent a psychological difference that is not captured via movement within each half of the scale, we created a categorical distinction between participants who endorsed and participants who rejected the influence of external factors on their career success.

First, we regressed participants' performance on priming condition (neutral = 0, God = 1), beliefs about external influence (centered around 0), and the interaction between the two. This yielded the predicted interaction, $\beta = -.39$, $t(65) = 2.30$, $p < .03$ (see Figure 1). We then used the Aiken and West (1991) method to interpret this interaction and found that among participants who tended to endorse the influence of external factors (i.e., those scoring at 1.5 *SD*s above the mean), those primed with God performed marginally worse (*predicted score* = 18.5) than did those who were not primed (*predicted score* = 29.0), $\beta = -.39$, $t(65) = 1.78$, $p < .08$. Among participants who tended to reject the influence of external factors (i.e., those scoring at 1.5 *SD*s below the mean), those primed with God performed better (*predicted score* = 31.7) than did those who were not primed (*predicted score* = 19.3), $\beta = .46$, $t(65) = 2.08$, $p < 05$.

Next, splitting participants at the scale midpoint, we also conducted a 2 (priming condition) × 2 (beliefs about external influences) analysis of variance (ANOVA) on participants' performance. This analysis produced a significant interaction, $F(1, 65) = 7.84$, $p < .01$, similar to the one reported above. Among endorsers of the influence of external factors, God-primed participants performed worse ($N = 13$, $M = 16$, $SD = 11$) than did nonprimed participants ($N = 11$, $M = 31$, $SD = 20$), $F(1, 65) = 5.69$, $p < .02$. Among rejecters of external influence, no priming effect emerged ($N_{God} = 20$, $M_{God} = 28$, $SD_{God} = 14$; $N_{neutral} = 25$, $M_{neutral} = 22$, $SD_{neutral} = 14$), $F(1, 65) = 1.19$, $p = .28$.

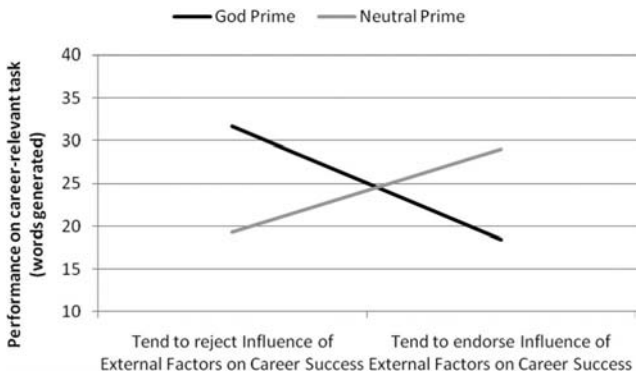


Figure 1. Performance on an ostensibly career-goal-related task by participants who tended to endorse or reject the influence of external factors on their career success, depending on priming condition (God vs. neutral; Study 2).

Thus, we replicated the demotivating effect of God primes specifically among individuals who believe that external factors can influence their outcomes. In one case, we also found that among individuals who do not believe that external factors can influence their outcomes, God primes enhanced motivation. However, as we found no sign of such an effect in any other analysis in any other study, we do not discuss it further.

Secondary analyses. Although the interaction pattern we observed in our primary analyses supports our hypothesis concerning the mechanism of the effect of God primes, we also sought to test an alternative explanation for these effects: that God-primed participants' decreased performance occurred because they shifted their priorities away from career success and academic achievement. If this was so, then participants should have reported placing less value on achievement after being primed with God. To test this alternative explanation, we subjected participants' value ratings to the same regression analysis described above. We conducted this analysis for each of the 10 values we measured, but no main effects or interactions emerged Thus, it is unlikely that the God primes reduced participants' active pursuit of their career goals because they shifted participants' values away from these goals.

Across two studies, then, we have found evidence that reminding people of God can decrease their active goal pursuit. In addition, in Study 2, we observed that this effect is moderated by an individual difference variable directly related to the mechanism we posit for this effect: That is, only those who believed external forces could influence their career success demonstrated reduced active goal pursuit following the God prime. Study 6 tests this mechanism in a different way. First, though, we turn to three studies that examine our second hypothesis—that, although reminders of God may hinder self-regulation by reducing active goal

pursuit, they can also facilitate self-regulation by increasing temptation resistance.

Study 3

In our first empirical test of the hypothesis that reminding people of God will increase temptation resistance, we measured health-conscious participants' automatic evaluative associations with unhealthy but desirable food ("junk food") as a measure of temptation resistance. Prior research has demonstrated that people can effectively resist temptation objects by reducing their psychological value (e.g., Myrseth, Fishbach, & Trope, 2009). Thus, among participants who possess a goal to eat healthfully, more negative automatic associations with tempting unhealthy food should reflect greater temptation resistance. Thus, we predicted that the same reminders of God used in Studies 1 and 2 would lead people to show more negative automatic evaluations of tempting unhealthy food.

Method

Participants. Thirty-seven undergraduate students participated in exchange for partial course credit. We excluded data from six participants who had no goals for which junk food represented a temptation (see below).

Procedure. Participants first completed a general interest questionnaire, which included two questions designed to remind them of their healthy eating goals. These questions asked participants whether they ever limited the amount or type of foods they ate for health reasons and whether they were ever health conscious in their food choices. We excluded data from six participants who indicated that they had no food-related health goals.

Participants then completed the same priming task used in Study 1; they were randomly assigned to one of three conditions: the God condition, the positive condition, or the neutral condition. Following the priming task, participants completed a modified Implicit Association Test (IAT), which required them to use two computer keys to sort words into four categories (*junk food* [e.g., donut] vs. *not junk food* [e.g., chair] and *pleasant* [e.g., smile] vs. *unpleasant* [e.g., disease]). Automatic associations are inferred from the difference between participants' response latencies when *junk food* and *pleasant* share a response key and when *junk food* and *unpleasant* share a response key (see Greenwald, Nosek, & Banaji, 2003, for a detailed description of this paradigm). Although there is debate about how to interpret IAT scores (Olson & Fazio, 2006), there is widespread agreement that they reliably measure associations among mental representations (Amodio & Devine, 2006; Hugenberg & Bodenhausen, 2003). We computed the scores such that more positive numbers represented more positive associations with junk food.

Finally, participants completed a funnel debriefing procedure (Bargh & Chartrand, 2000). Although no participant correctly guessed the hypothesis of the experiment, two participants indicated that they thought the IAT measured their attitudes toward junk food. Excluding these participants from analyses did not change the results; the reported results thus include these participants.

Results and Discussion

Primary analyses. We predicted that reminders of God would increase temptation resistance, leading people to devalue junk food. Consistent with this hypothesis, God-primed participants had more negative automatic associations with junk food ($M = -0.17$, $SD = 0.35$) than did other participants ($M_{neutral} = 0.23$, $SD_{neutral} = 0.42$ and $M_{positive} = 0.25$, $SD_{positive} = 0.46$, respectively), $F(2, 28) = 3.39$, $p < .05$. LSD post hoc tests showed that the positive and neutral conditions did not differ from each other ($p = .95$), but both differed significantly from the God condition (God vs. neutral: $p < .04$; God vs. positive: $p < .03$).

These findings represent, to our knowledge, the first experimental evidence that thinking of God can improve temptation resistance even in domains unrelated to morality or religion, providing support for earlier theorizing about the beneficial impact of religion on self-regulation (Koole et al., 2010; McCullough & Willoughby, 2009). If we had examined evaluations of deeply immoral sins like sexual infidelity and lying, it would be unclear whether our participants were increasing their resistance of temptations generally or only in morality-relevant domains. But because our task required simply striving to avoid an unhealthy snack, it seems that activating thoughts of God can enhance people's ability to resist the items that represent temptations for whatever their currently active goals happen to be, even in areligious domains like dieting.

This experiment used an implicit measure that most participants did not know tapped their automatic associations with tempting unhealthy food. Moreover, this measure is designed specifically to capture associations that people do not consciously control (Kim, 2003; Steffens, 2004). This suggests that participants spontaneously changed their automatic evaluative associations with tempting unhealthy food in response to reminders of God. Findings from Study 3 are thus especially compatible with Koole et al.'s (2010) suggestion that religion can promote "flexible, efficient, and largely unconscious" self-regulation (p. 95).

Study 4

Study 3 demonstrated that reminding participants of God led them to show more negative associations with tempting foods. In Study 4, we sought to extend these findings by employing a behavioral measure of temptation resistance. Specifically, we measured temptation resistance by giving participants an opportunity to eat cookies, as part of a taste-testing task (Stillman, Tice, Fincham, & Lambert, 2009). Because all participants reported possessing a goal to eat healthfully, and because pilot testing (see below) confirmed that people view performance on this task as reflecting temptation resistance and not active goal pursuit, we took the number of cookies eaten to reflect (lack of) temptation resistance.

We also sought to replicate the effect we found in Study 3 using a different paradigm for reminding participants of God. Participants were exposed to a speech excerpt that was either about God (God condition) or the declassification of Pluto as a planet (control condition). We predicted that participants reminded of God would consume fewer cookies than would control participants.

Method

Participants. Twenty-three undergraduate students participated in exchange for partial course credit. All participants reported in pretesting that they had goals to eat healthily.

Procedure. Participants began by drawing a slip of paper out of a bowl, ostensibly to determine which of several test products they would evaluate first. In fact, the bowl contained only slips of paper labeled "student club." The experimenter explained that this meant they would first evaluate a student club's website. The website presented an excerpt from a presentation given by a recent guest speaker, which was either a speech about the declassification of Pluto as a planet or a speech about God. The speech about God made pronouncements about God such as "God is the beginning and end of all things, all things else are from Him, and by Him, and in Him." Participants read the speech excerpt and then answered some questions about the website's user interface.

A second rigged draw assigned all participants to the same filler product-evaluation task, included to disguise the purpose of the study. A final rigged draw assigned participants to a taste-testing task. The experimenter produced a bowl containing 35 bite-sized chocolate-chip cookies and a cookie evaluation form and told participants that they needed to eat only one cookie to complete the evaluation, but they could eat more if they wished. The experimenter left participants alone in the room with the cookies for 10 min before returning to debrief them. After debriefing each participant, the experimenter counted and recorded the number of cookies remaining in the bowl and used this number to calculate the dependent measure (number of cookies eaten).

After the session, participants completed a funnel debriefing procedure (Bargh & Chartrand, 2000). No participant reported believing that the speech excerpt task and the taste-testing task were related.

Results and Discussion

Premeasure of task relevance. To determine whether participants saw the anagrams task as requiring them to resist temptations—rather than actively pursue their healthy eating goal—we described the procedure to the same sample of 24 participants described in the pilot test section of Study 1. We asked these participants to rate how much eating few cookies in this situation required active goal pursuit and temptation resistance, using two 7-point scales ranging from 1 (*not at all*) to 7 (*very much*). Participants indicated that they thought eating few cookies would require more temptation resistance ($M = 5.79$, $SD = 1.86$) than active goal pursuit ($M = 3.92$, $SD = 2.22$), $t(23) = 4.39$, $p < .001$. When asked directly to indicate whether eating few cookies required active goal pursuit or temptation resistance, 100% of participants chose the latter.

Primary analyses. We predicted that participants who first read about God would display better temptation resistance (i.e., eat fewer cookies) than other participants. Consistent with this prediction, participants reminded of God ate fewer cookies ($M = 2.82$, $SD = 1.54$) than did control participants ($M = 7.67$, $SD = 5.31$), $t(21) = 2.91$, $p < .01$.[2] Study 4, therefore, replicated the findings of Study 3 with a behavioral measure: Participants who were exposed to the concept with God displayed better temptation resistance.

Study 5

Thus, Studies 3 and 4 found evidence that reminding people of God can increase people's willingness to resist temptations. In this fifth study, we sought to gain insight into the reasons why reminders of God might increase people's temptation resistance by examining the boundary conditions of this effect. We have hypothesized that the effect occurs because people tend to view God as an all-knowing, omniscient being observing their actions. However, although previous research suggests that most people's representation of God includes omniscience to some degree, we suspect that some people's views of God might differ from the majority's in this regard. If this is true, then individual differences in representations of God's omniscience should moderate the effect of God reminders on temptation resistance. More specifically, people reminded of God should show especially high temptation resistance only if their mental representation of God contains the concept of omniscience.

Method

Participants. Thirty-three undergraduate students participated in exchange for partial course credit. We dropped two of these participants from our analyses because they failed to complete the measure of God representations.

Procedure. Several weeks before the experimental session, we measured participants' beliefs about God's omniscience. Participants used a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) to rate their agreement with the statement "If God, or some other type of spiritual nonhuman entity, exists, it is likely that this entity watches people's behavior and notices when they misbehave."

When participants arrived at the study website, they believed they were participating in a series of unrelated surveys created by various student clubs. The website first "assigned" participants to the same experimental manipulation used in Study 4, where they read one of two speech excerpts, one of which was about God. Following this manipulation, the website "assigned" participants to a second survey, designed to measure their temptation resistance. The survey presented participants with eight different long-term goals (finding a long-term relationship, comfortable retirement, making long-lasting friendships, being attractive to members of the opposite sex, acquiring a house, having a successful career in the profession of participants' choice, maintaining a healthy body weight, and doing well academically). The survey then asked participants to rate, for each goal, their willingness to resist temptations in order to achieve that goal, on a 7-point scale ranging from 1 (*not at all willing*) to 7 (*extremely willing*). We formed the dependent measure by averaging together participants' ratings across the eight goals. This measure showed acceptable internal consistency (Cronbach's $\alpha = .71$), and because we asked participants about a diverse range of commonly held goals covering a variety of domains, we reasoned that we could use this measure as an indicator of temptation resistance.

[2] Adjusting for the unequal variances in the two groups produced the same significant result, $t(12.98) = 3.03$, $p = .01$.

Results and Discussion

Primary analyses. We predicted that people reminded of God would show especially high temptation resistance to the extent that they represent God as a watching, omniscient being. As in Study 2, we tested this prediction in two ways. First, we treated participants' representations of God as a continuous variable in a regression. Second, because we again thought that crossing the midpoint of this scale may represent a psychological difference that is not captured via movement within each half of the scale, we created a categorical distinction between participants whose representations of God did and did not include the feature of omniscience. We predicted that participants whose representation of God included omniscience—that is, those who responded at the scale midpoint or higher—would report increased temptation resistance when reminded of God, whereas those whose representation of God did not include omniscience—that is, those who responded below the midpoint—would not.

First, we regressed participants' willingness to resist temptation on speech excerpt condition (neutral = 0, God = 1), representation of God (centered around 0), and the interaction between the two. The interaction emerged as the only significant predictor, $\beta = .63$, $t(27) = 2.42$, $p < .03$ (see Figure 2). We used the Aiken and West (1991) method to interpret this interaction and found that among participants whose representation of God tended to include the feature of omniscience (i.e., those scoring at 1.5 *SD*s above the mean), those who read a speech excerpt about God reported a greater willingness to resist temptations (*predicted score* = 6.85) than did those who read a speech excerpt about Pluto (*predicted score* = 5.37), $\beta = .77$, $t(27) = 2.40$, $p < .03$. Among participants whose representation of God tended not to include this feature (i.e., those scoring at 1.5 *SD*s below the mean), no such effect emerged ($predicted\ score_{God} = 5.76$; $predicted\ score_{neutral} = 6.80$), $\beta = -.54$, $t(27) = 1.66$, $p = .11$.

Next, we conducted a 2 (speech excerpt condition) × 2 (representation of God) ANOVA on participants' reports of temptation resistance. This analysis produced a significant interaction, $F(1, 27) = 4.18$, $p = .05$, similar to the one reported above. Among participants whose representation of God included the feature of omniscience, those who read a speech excerpt about God reported a greater willingness to resist temptations ($N = 6$, $M = 6.65$, $SD = 0.29$) than did those who read a speech excerpt about Pluto ($N = 7$, $M = 5.54$, $SD = 1.25$), $F(1, 27) = 3.97$, $p < .06$. Among participants whose representation of God did not include this feature, no such effect emerged ($N_{God} = 9$, $M_{God} = 6.05$, $SD_{God} = 1.03$; $N_{neutral} = 9$, $M_{neutral} = 6.38$, $SD_{neutral} = 0.82$), $F(1, 27) < 1$, *ns*.

Thus, Study 5 replicated the findings from Studies 3 and 4 and further demonstrated that this effect depends on participants' representations of God including the feature of omniscience. This finding supports our hypothesis that reminders of God influence temptation resistance because they activate the notion of an omniscient, watching being.

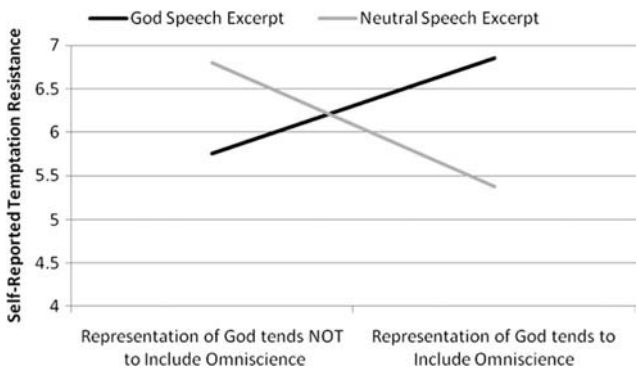


Figure 2. Self-reported willingness to resist temptation in the interests of a variety of goals by participants whose representations of God tended to include or not to include the feature of omniscience, depending on whether they read a speech excerpt about God or an unrelated speech excerpt (Study 5).

Study 6

Studies 1 and 2 demonstrated the effects of exposure to God reminders on active goal pursuit, and Studies 3 through 5 demonstrated the effects on temptation resistance. With Study 6, we sought evidence for both phenomena within a single design and sought to further examine our presumed mechanisms of these effects. To accomplish this latter aim, we manipulated the type of God representation emphasized by the manipulation. In Studies 1 through 5, we reminded participants of God in a general, nonspecific way, which should have served to activate both of God's key features—omnipotence and omniscience. However, it should be possible to remind people of God in a way that places particular emphasis on either omnipotence or omniscience. In Study 6, we randomly assigned participants to one of four speech excerpt conditions, one of which was the control condition from Studies 4 and 5 (the status of Pluto as a planet). In the other conditions, participants read a speech excerpt designed to reflect a particular conceptualization of God. One portrayed God again as a creator, one as a guide to a fulfilling life, and one as a controller.

We predicted that these different conceptualizations would produce different outcomes depending on whether we examined temptation resistance or active goal pursuit as our dependent measure. Because all of the conditions used phrases that emphasized God's unlimited knowledge about the universe and about human beings—that is, God's omniscience—we predicted that all conceptualizations of God would improve temptation resistance. However, because only the God as controller condition used language that emphasized God's ability to influence and control people's outcomes—that is, God's omnipotence—we predicted that only that condition would decrease active goal pursuit, while the other God-prime conditions would have no effect on active goal pursuit.

Assessing active goal pursuit and temptation resistance in the same goal domain helps rule out the alternative possibility that our results from Studies 1 through 5 occurred because reminders of God have different effects on different goals (i.e., inhibitive effects on career goals, Studies 1 and 2; facilitative effects on other goals, Studies 3 through 5). Contrasting effects of God primes on the two facets of self-regulation with respect to the same goal in Study 6 would support our hypothesis that reminders of God have inhibitive effects on generalized active goal pursuit but facilitative effects on generalized temptation resistance.

For the dependent measure, we asked participants about their interest in a series of desirable careers (Laurin, Fitzsimons, & Kay, 2011). Participants in the active goal pursuit condition rated how

interested they would be in investing efforts toward achieving these careers; participants in the temptation-resistance condition rated how willing they would be to resist temptations in the interest of achieving these careers. We predicted that participants reminded of a controlling God would report *less* willingness to invest effort, compared to the other God and control conditions, and that participants reminded of any of the three conceptualizations of God would report *more* willingness to resist temptation compared to the control condition.

Method

Participants. One hundred and fifty-four undergraduate students participated in exchange for partial course credit.

Procedure. Participants learned that the experiment's website would assign them to a number of unrelated surveys administered by various student clubs. They were first "assigned" to our experimental manipulation, which was conceptually similar to the one used in Studies 4 and 5, with four conditions. The conditions were as follows: God as the ultimate creator, God as the guide to a fulfilling life, God as the ultimate controller, and the planetary status of Pluto. As in Studies 4 and 5, participants read the speech excerpt and evaluated the webpage's user interface.

All three God conditions contained elements that hinted at God's omniscience. The speech in the creator condition stated that God "understands the intricacies of our world," the speech in the guide condition stated that God can be "influenced by our actions and our prayers," and the speech in the controller condition stated that God "understands what it is like to be in our shoes." Although not direct references to omniscience, all of these statements imply that God can see and hear things that go on in the world. However, only the controller condition made repeated reference to the fact that God can influence people's outcomes: God is "sovereign and is completely in control of our lives," God's decisions "are based solely on His own independent and sovereign will," and "what you get out of life depends on God." Thus, in all three God conditions, God's omniscience was at least implied; only in the controller condition, however, was God's omnipotence emphasized.

The second ostensible student club survey was our dependent measure of self-regulation, adapted from a measure recently developed by Laurin et al. (2011). The survey presented participants with a list of careers covering a range of domains: lawyer, registered nurse, stockbroker, politician, social worker, company president, dietician, and librarian. Participants in the active goal pursuit condition rated, for each career, their interest in completing the postsecondary schooling required to attain that career. Participants in the temptation-resistance condition rated, for each career, how likely they would be to resist the temptation to hang out and have fun with their friends on an evening when they should be studying for an important exam that was a required step in attaining that career.

To account for the influence of idiosyncratic preferences on these ratings, participants also rated their interest in each career assuming no work was required for successful entry. To form the dependent measure, we partialled out participants' interest in each career from their willingness to self-regulate (either in the sense of active goal pursuit through schooling or in the sense of resisting the temptation of fun socializing, depending on condition) in order to attain that particular career. Specifically, we used multiple regression to compute unstandardized residuals for each career. We then averaged these residuals across careers, leaving us with measures of generalized willingness to actively pursue goals (for participants in the active goal pursuit condition) and of generalized willingness to resist temptation (for participants in the temptation-resistance condition).[3] These measures showed reasonable internal consistency, with Cronbach's alphas of .81 and .74, respectively (see Laurin et al., 2011).

Results and Discussion

Primary analyses. We predicted that participants reminded of a controlling God would report less willingness to actively pursue their career goals but that participants reminded of any type of (omniscient) God would report more willingness to resist temptations threatening their career goals. Consistent with this prediction, a 4 (speech excerpt condition) $\times$ 2 (self-regulation condition) ANOVA revealed a significant interaction, $F(3, 146) = 5.34$, $p < .01$ (see Figure 3). LSD post hoc tests showed that, as expected, participants reminded of God in a way that emphasized God's control over humans' outcomes reported a reduced willingness to actively pursue their goals ($M = -0.53$, $SD = 0.58$), relative to participants in all other conditions ($M_{\text{control}} = 0.42$, $SD_{\text{control}} = 1.03$; $M_{\text{God-creator}} = 0.06$, $SD_{\text{God-creator}} = 0.69$; $M_{\text{God-guide}} = 0.14$, $SD_{\text{God-guide}} = 0.45$; $p_{\text{God-controller vs. control}} < .01$, $p_{\text{God-controller vs. God-creator}} < .02$, $p_{\text{God-controller vs. God-guide}} < .02$, which did not differ from each other in terms of active goal pursuit; all ps $> .39$). A parallel set of LSD post hoc tests showed that, also as expected, participants reminded of God in any form reported a stronger willingness to resist temptation ($M_{\text{God-creator}} = -0.01$, $SD_{\text{God-creator}} = 0.74$; $M_{\text{God-guide}} = 0.31$, $SD_{\text{God-guide}} = 1.24$; $M_{\text{God-controller}} = 0.38$, $SD_{\text{God-controller}} = 0.91$) than did participants in the control condition ($M = -0.57$, $SD = 1.00$; $p_{\text{control vs. God-creator}} < .09$, $p_{\text{control vs. God-guide}} < .01$, $p_{\text{control vs. God-controller}} < .01$). The three God-prime conditions did not differ from each other in terms of temptation resistance (all ps $> .13$).

General Discussion

Six studies examined how exposure to God influences self-regulation. In Study 1, we measured performance on a career-relevant task that required participants to engage in active goal pursuit. Participants primed with God performed less well compared to participants primed with neutral concepts and participants primed with positive concepts. This latter finding rules out the possibility that God-primed participants' reduced active goal pursuit occurred simply because of the positive nature of God concepts. In Study 2, we measured performance on the same career-relevant active goal pursuit task and also premeasured participants' beliefs about the influence of external factors on their career success. Among participants who endorsed the notion that external factors, such as God, might influence their career success, those primed with God performed less well than did those primed with neutral concepts. Among participants who rejected the notion that external factors might influence their career success, no priming effect was observed. In Study 2 we also measured the impor-

[3] Results were identical if we computed a difference score (interest in careers requiring self-regulation minus interest in careers requiring no self-regulation) to serve as the dependent measure.

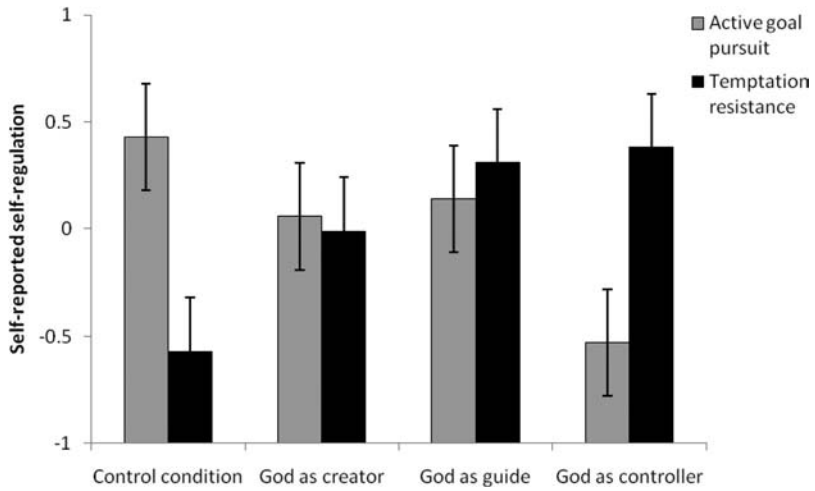


Figure 3. Self-reported willingness to actively pursue career goals and self-reported willingness to resist temptation in the interests of career goals, depending on whether participants read about God as a creator, God as a guide, God as a controller, or the planetary status of Pluto (Study 6). Error bars represent standard error of the mean.

tance participants placed on a number of values, including achievement. Participants primed with God placed, if anything, *more* value on achievement than did participants primed with neutral concepts, suggesting that our findings did not emerge because God-primed participants devalued achievement.

In Studies 3, 4, and 5, we examined the effects of reminders of God on temptation resistance. In Study 3, we operationalized temptation resistance as devaluing temptation objects; more specifically, we measured automatic evaluative associations of tempting unhealthy food among participants with a goal to eat healthfully. Those primed with God had more negative automatic associations with foods like chocolate, chips, and donuts, compared to participants primed with neutral concepts and also compared to participants primed with positive concepts. In Study 4, we used a behavioral measure of temptation resistance, assessing cookie consumption among participants with a goal to eat healthfully. Those participants who had read a short passage about God subsequently ate fewer cookies than did those who had read a control passage about a topic unrelated to God.

In Study 5, we took a different approach toward assessing temptation resistance, measuring self-reported willingness to resist temptations in a variety of domains. We also measured beforehand the extent to which participants' representation of God included the feature of omniscience. Among participants whose representation of God tended to include the feature of omniscience, those who read a God passage reported greater willingness to resist temptation, compared to those who read a control passage. Among participants whose representation of God tended not to include the feature of omniscience, we found no such effect.

Finally, in Study 6, we sought evidence for both phenomena using a single paradigm. Participants read one of four passages and completed one of two sets of dependent measures. Those who read the passage that described God as a controlling, omnipotent force showed less willingness to engage in active goal pursuit, relative to participants who read one of the two passages describing a non-controlling God or a control passage about a topic unrelated to God. Those who read one of the three God passages, all of which described God as an omniscient, all-knowing force, showed greater willingness to resist temptations, relative to participants who read the control passage. Thus, even within the same goal domain, reminders of God can have divergent effects on two different components of self-regulation.

These results, therefore, provide the first experimental evidence that reminders of God can impair some aspects of self-regulation (active goal pursuit) while improving others (temptation resistance). In other words, the relationship between God and self-regulation is nuanced. God primes are neither completely helpful nor completely harmful to self-regulation; rather, the effect depends on the form of self-regulation in question. These divergent effects emerged even within the same goal domain and even in amoral, areligious goal domains. Moderational findings also suggested that the effects of God primes on self-regulation occurred as a result of two features commonly ascribed to the cultural concept of God: omnipotence and omniscience.

Active Goal Pursuit Versus Temptation Resistance

Active goal pursuit and temptation resistance are thought to be intimately related and analogous mediators of factors that promote goal attainment. Indeed, past research has used both active goal pursuit (e.g., Fitzsimons & Bargh, 2003) and temptation resistance (e.g., Fishbach et al., 2003) as interchangeable indicators of goal importance and activation. Moreover, factors that increase active goal pursuit tend to also increase temptation resistance (Fishbach & Shah, 2006; Gollwitzer & Sheeran, 2006). In the present research, we deliberately separated active goal pursuit from temptation resistance, designing tasks that tapped one more than the other. We did this so that we could isolate the independent effects of reminders of God on each of these two components of self-regulation. Doing so, we observed that these components can, in fact, vary in opposite directions.

It seems clear, however, that in the real world, active goal pursuit and temptation resistance often do go hand in hand. For instance, studying for an exam often requires students to not only resist the temptation to waste time on the Internet but also to focus their efforts on goal-directed activities such as reading, rewriting notes, taking practice exams, and so forth. Moving beyond the completion of specific goal-related tasks makes it even more obvious that people must engage in both active goal pursuit and temptation resistance to attain their higher order goal. Few weight-loss programs focus exclusively on avoiding fattening foods or exclusively on exercising. Rather, most people who lose weight successfully engage in both active goal pursuit (e.g., exercise) and temptation resistance (e.g., avoiding unhealthy foods; Barlow & Dietz, 1998; Klem, Wing, McGuire, Seagle, & Hill, 1997; Serdula et al., 1999).

Thus, it is likely that reminders of God influence most real-world goals in both positive and negative ways. Some of the time, these influences might cancel each other out, but other times, one might be stronger than the other. The present research identifies two important factors influencing the relative strength of these two effects. The first of these has to do with the activated representation of God. If, on the one hand, a person is reminded of God, and this activates the representation of an omnipotent, but not omniscient, external force (whether as a result of features of the reminder itself or as a result of how the person represents God), the net influence on the person's self-regulation might be negative. If, on the other hand, a person is reminded of God, and this activates the representation of an omniscient, but not omnipotent, external force (whether as a result of features of the reminder itself or as a result of how the person represents God), the net influence on the person's self-regulation might be positive. The second factor influencing the net effect of God primes on self-regulation pertains to the self-regulation task in question. As suggested by the pilot testing results from Studies 2 and 4, people may view some tasks as primarily requiring active goal pursuit and other tasks as primarily requiring temptation resistance. As such, the net influence of God primes on self-regulation should also depend on which of these features a given task is construed as primarily requiring.

Max Weber (1930/1976) argued that the Protestant—and especially Puritanical—faith of early Americans gave them a particular capacity for hard work, which led to high achievement in a capitalist society. The present work stands somewhat in contrast to the Weberian hypothesis, as it shows that people reminded of a God who controls their lives (a God concept that closely matches that of early Protestant theology; Thuesen, 2011) are not more but rather *less* motivated to pursue their goals. Empirical support for the Weberian hypothesis is mixed (e.g., Guiso, Sapienza, & Zingales, 2003; Hayward & Kemmelmeier, 2007), and the present research does not directly speak to Weber's argument, which had more to do with people's insecurities about the eternal fate of their soul and less to do with the exposure to God concepts early American Protestants no doubt experienced. However, to the extent that there is a relation between early American Protestantism and successful goal pursuit, the present research suggests that it may be due to the enhanced ability to resist tempting but nonproductive distractions occasioned by frequent discussions or thoughts of an all-knowing and all-seeing God.

Variations in God Concepts

Although most Westerners appear to see God as an omnipotent, omniscient being, there remain important variations—both within and across cultures—in these views, and these variations may have important implications for the effects studied here. Indeed, within our sample, we found that participants differed significantly in the degree of omniscience they attributed to the cultural concept of God, with approximately 10% of participants rating God's omniscience at the lowest possible point on the scale. Importantly, our measure was relatively specific, asking for participants' view of God's ability to know about and keep track of people's misbehaviors, and may thus have missed some variation in views. Although most people may have a view of God as omniscient in a broad sense, they may differ in their conceptualizations of the nature or scope of this omniscience. For example, some may see God as watching every move they make, while others may see God as caring only about their most important actions. Similarly, some people may view God as attending only to certain domains of moral behavior such as honesty and fidelity, while others may see relevant domains as much broader, including behaviors like dancing and game playing. Such variations in conceptualizations of omniscience may moderate the influence of God reminders on temptation resistance in important ways unstudied in the current research.

Of course, such variations are likely even larger and more impactful across cultures. Scholarship on the origin of religion suggests that how the features of the God concept manifest in a given society depends on the features of the society itself. Specifically, powerful gods with features like omnipotence and omniscience are thought to be the product of large, relatively anonymous societies where human factors alone cannot prevent free riding and norm violation (Norenzayan & Shariff, 2008; Norenzayan et al., 2009). This account of the origin of religion implies that the effects we have found here would play out differently in different cultural and societal contexts. Most people in today's world inhabit the large and anonymous societies that conceive of omnipotent, omniscient gods. However, in smaller, more well-connected societies—or, perhaps more interestingly, in large, anonymous societies that have found other effective ways of dealing with problems like free riding and norm violation—God may be associated with lesser powers, and thus, reminders of God might not affect self-regulation in the way we have described here.

Additional Pathways

In the present research, we have identified two ways in which reminders of God influence goal pursuit. However, we by no means wish to suggest that these two are the only routes through which God and religion can influence self-regulation (see McCullough & Willoughby, 2009, for a comprehensive review of potential positive influences of religion on self-regulation). We believe that the present work could be extended in at least two obvious ways. First, we have assumed that views of God's omniscience and omnipotence exert linear and independent effects on self-regulation; however, it is possible that variations in these views could also interact to shape goal pursuit. For example, reminders of an omniscient God may increase temptation resistance in part because people fear the punishments that God can

inflict on wrong-doers. If so, then reminders of a God who is omniscient, but incapable of influencing outcomes, may not increase temptation resistance as much as reminders of a God who is omniscient and also capable of inflicting severe punishments.

Second, God is a complex and multifaceted construct, and there is no reason to believe that omnipotence and omniscience are the only features of God concepts that can influence self-regulation. For example, moral involvement is another important feature of the representation of God in large anonymous societies (Norenzayan & Shariff, 2008; Norenzayan et al., 2009; see also Roes & Raymond, 2003). According to the theory of the origin of religion mentioned above (Norenzayan et al., 2009), only a God who cares about the moral conduct of human beings can help prevent social problems such as free riding and norm violation. Similarly, it may be necessary for people to view God as morally invested in their actions in order for reminders of God to enable them to resist temptations. As another example, perceptions of benevolence, or God's concern for the welfare of human beings, could also moderate the impact of exposure to God concepts on self-regulation, such that the decrease in effort we found here may occur only among those who see God as benevolent and helpful to their goals (Chartrand, Dalton, & Fitzsimons, 2007; Fitzsimons & Finkel, 2011).

Role of Preexisting Beliefs

What makes our results particularly striking is that they do not appear to be restricted to the religiously devout. In all six studies, reminders of God led to decreased active goal pursuit and increased temptation resistance independently of preexisting religiosity. These findings may appear at first glance to contradict previous reviews, which have found consistent associations between broad religion variables (religious orientation, involvement with religious practices, etc.) and temptation resistance in moral and religious domains (Koole et al., 2010; McCullough & Willoughby, 2009). However, these two sets of findings need not be viewed as contradictory. Rather, the current findings offer one possible mechanism to explain how broader religion variables influence temptation resistance in moral and religious domains.

Here, we have found that activating the concept of God in people's minds can lead them to greater temptation resistance. While we contend that reminders of God abound in today's world, it is likely that for some people the concept of God is more chronically activated than it is for others. These people are likely to be those who have intrinsic religious orientations, those who regularly attend religious services, those who pray frequently—the very ones who have been found to be better at resisting temptations in moral and religious domains (Koole et al., 2010; McCullough & Willoughby, 2009). Thus, many religion variables may predict greater temptation resistance in moral and religious domains in part because they also predict more frequent activation of the God concept.

Although we consistently found that exposure to God influences self-regulation regardless of individuals' preexisting religiosity, in two studies we found evidence that certain preexisting beliefs *can* moderate these effects. In Study 2, participants reduced their active pursuit of career goals following exposure to God *only* if they believed that success on career goals was subject to external influence. In Study 5, participants said they would be more willing to reduce temptations following exposure to God *only* if they believed God to be an omniscient being who takes note of people's transgressions. Although these findings support the mechanisms that we have hypothesized to produce our effects, they also raise an important question. If explicit beliefs about the nature of goals and the nature of God can moderate the influence of exposure to God on self-regulation, should not also beliefs about the very *existence* of God moderate this influence? If individuals who believe that God is not very omniscient did not increase their temptation resistance in response to reminders of God, then surely individuals who believe that God does not exist should be impervious to God primes. Why, then, did we find that the influence of reminders of God occurred regardless of religiosity?

We offer three explanations for this seeming paradox. First, it is important to recognize the distinction between religiosity and belief in God. While the constructs of religiosity and belief and God are almost certainly overlapping, they are not identical. Thus, although religiosity did not moderate the influences of exposure to God, a pure measure of belief in the existence of God might have produced different results. In favor of this first explanation, we note that a person can consider him- or herself highly religious and yet reject the notion of a singular supreme spiritual being. For example, humanistic Judaism emphasizes Jewish culture and heritage, rather than belief in God, as the primary source of Jewish identity (Goldfinger, 1996; Wine, 1996). Likewise, a person can believe in a supreme spiritual "God" force and reject conventional religiosity. Figures from a recent Gallup International (1999) poll indicate that at the very least 5% of the world's population are nonreligious believers. Thus, perhaps a true measure of belief in God would have moderated our effects.

A second possibility is that, given our sample population, even a pure measure of belief in God would have failed to moderate the effects of reminders of God on self-regulation. Perhaps people who believe with absolute certainty that God does not exist should be immune to these effects. However, it may be that any belief in a nonzero probability of God's existence suffices to allow reminders of God to influence self-regulation. In other words, only the truest of atheists should be resistant to the effects of God primes on self-regulation. But such individuals form a very small minority of the college population from which we drew our samples (see Shariff & Norenzayan, 2007). Thus, while true nonbelievers might be immune to the influence of God primes on self-regulation, we may have been unable to detect this fact due to the rarity of these individuals in our sample population.

Finally, a third explanation suggests that beliefs about the existence of God truly do not moderate the effects of God primes on self-regulation. This explanation draws on the distinction between *be*lief and *a*lief (Gendler, 2008). Whereas belief is a consciously held endorsement of a particular proposition (e.g., "bats are not dangerous animals"), alief is a habitual propensity to respond to a particular concept in a certain way, independently of belief (e.g., by screaming and cowering at the sight of a bat). Thus, even individuals who *believe* that God does not exist might still respond to the concept of God as if they did. Thus, participants who did not believe in God, when reminded of the concept of God, might still have felt less motivated to actively pursue their goals—as long as they believed that those goals were subject to the influence of factors outside of themselves, such as God. Similarly, participants who did not believe in God, when reminded of the concept of God,

might have felt more motivated to resist temptations—as long as their understanding of that God concept included the feature of omniscience.

The idea that exposure to God can influence behavior even among people who do not endorse the existence of God is consistent with research on stereotyping processes. An important finding in the stereotyping literature is that exposure to the stereotypes of various social groups can influence behavior even among people who do not endorse the validity of the stereotypes (Bargh, Chen, & Burrows, 1996; Devine, 1989). That is, individuals who explicitly reject given beliefs about an ethnic minority group are affected by primed group members in the exact same fashion as are individuals who explicitly endorse those beliefs. For example, even individuals who did not hold explicitly negative views of African Americans acted more aggressively after they had been primed with the African American stereotype (Bargh et al., 1996) and rated the protagonist in a hypothetical scenario as more hostile (Devine, 1989). These parallel findings lend credence to the idea that it could be participants' understanding of the culturally defined concept of "God," rather than their explicit beliefs about God's existence, that causes them to adjust their self-regulation in response to God primes.

Without further empirical work, we cannot decisively refute or substantiate any of these three possible explanations. We suspect, though, that each of the three explanations offered here may have some validity in describing the role of explicit belief in God in the self-regulatory processes described here. At the same time, we would like to point out that both the second and third explanations suggest that nearly everyone should be susceptible to the influence of reminders of God on self-regulation. A vast majority of the world believes that God does or may exist (Gallup International, 1999), so even if true atheists are immune to the effects described here, they represent a small minority of not only college students but of the world. Moreover, although we have found no statistics to support this claim, it seems safe to presume that an even vaster majority of the world is familiar with the concept of God. Thus, if God reminders can influence the self-regulation not only of believers but of anyone who has a representation of God as a cultural concept, then at least in cultures where God is portrayed as omnipotent and omniscient, reminders of God are likely a persistent and pervasive influence on self-regulation.

Concluding Remarks

The current research responds to recent calls for "more careful empirical work that can separate the aspects of religiousness that promote self-regulation from those that hinder self-regulation" (McCullough & Willoughby, 2009, p. 88). When one considers the ubiquity of religious constructs in everyday life and the fact that our findings do not appear to be restricted to the religiously devout, the implications of the current findings are far reaching. From popular and classic works of fiction, to the news media, to everyday conversation, the social world is replete with mentions of God. The current findings suggest that this exposure may have broad societal consequences for fundamental psychological processes of self-regulation, which in turn underlie much of health, happiness, and human productivity.

References

Achtziger, A., Gollwitzer, P. M., & Sheeran, P. (2008). Implementation intentions and shielding goal striving from unwanted thoughts and feelings. *Personality and Social Psychology Bulletin, 34,* 381–393. doi:10.1177/0146167207311201

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Thousand Oaks, CA: Sage.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action control: From cognition to behavior* (pp. 11–39). Heidelberg, Germany: Springer.

Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology, 22,* 453–474. doi:10.1016/0022-1031(86)90045-4

Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology, 5,* 432–443. doi:10.1037/h0021212

Amodio, D. M., & Devine, P. G. (2006). Stereotyping and evaluation in implicit race bias: Evidence for independent constructs and unique effects on behavior. *Journal of Personality and Social Psychology, 91,* 652–661. doi:10.1037/0022-3514.91.4.652

Atran, S., & Norenzayan, A. (2004). Religion's evolutionary landscape: Counterintuition, commitment, compassion, communion. *Behavioral and Brain Sciences, 27,* 713–730. doi:10.1017/S0140525X04000172

Baldwin, M. W., & Holmes, J. G. (1987). Salient private audiences and awareness of the self. *Journal of Personality and Social Psychology, 52,* 1087–1098. doi:10.1037/0022-3514.52.6.1087

Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist, 54,* 462–479. doi:10.1037/0003-066X.54.7.462

Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253–285). New York, NY: Cambridge University Press.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology, 71,* 230–244. doi:10.1037/0022-3514.71.2.230

Barlow, S. E., & Dietz, W. H. (1998). Obesity evaluation and treatment: Expert committee recommendations. *Pediatrics, 102,* e29. doi:10.1542/peds.102.3.e29

Bartkowski, J. P., Xu, X. H., & Levin, M. L. (2008). Religion and child development: Evidence from the early childhood longitudinal study. *Social Science Research, 37,* 18–36. doi:10.1016/j.ssresearch.2007.02.001

Bateson, M., Nettle, D., & Roberts, G. (2006). Cues of being watched enhance cooperation in a real-world setting. *Biology Letters, 2,* 412–414. doi:10.1098/rsbl.2006.0509

Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Twenge, J. M. (2005). Social exclusion impairs self-regulation. *Journal of Personality and Social Psychology, 88,* 589–604. doi:10.1037/0022-3514.88.4.589

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16,* 351–355. doi:10.1111/j.1467-8721.2007.00534.x

Bayer, U. C., Gollwitzer, P. M., & Achtziger, A. (2010). Staying on track: Planned goal striving is protected from disruptive internal states. *Journal of Experimental Social Psychology, 46,* 505–514. doi:10.1016/j.jesp.2010.01.002

Beaman, A. L., Klentz, B., Diener, E., & Svanum, S. (1979). Self-awareness and transgression in children: Two field studies. *Journal of Personality and Social Psychology, 37,* 1835–1846. doi:10.1037/0022-3514.37.10.1835

Bering, J. M. (2006). The folk psychology of souls. *Behavioral and Brain Sciences, 29,* 453–462. doi:10.1017/S0140525X06009101

Bering, J. M., McLeod, K. A., & Shackelford, T. K. (2005). Reasoning about dead agents reveals possible adaptive trends. *Human Nature, 16,* 360–381. doi:10.1007/s12110-005-1015-2

Carver, C. S., & Scheier, M. F. (1982). Outcome expectancy, locus of attribution for expectancy, and self-directed attention as determinants of evaluations and performance. *Journal of Experimental Social Psychology, 18,* 184–200. doi:10.1016/0022-1031(82)90049-X

Chartrand, T. L., Dalton, A. N., & Fitzsimons, G. J. (2007). Nonconscious relationship reactance: When significant others prime opposing goals. *Journal of Experimental Social Psychology, 43,* 719–726. doi:10.1016/j.jesp.2006.08.003

Dahl, D. W., Manchanda, R. V., & Argo, J. J. (2001). Embarrassment in consumer purchase: The roles of social presence and purchase familiarity. *Journal of Consumer Research, 28,* 473–481. doi:10.1086/323734

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56,* 5–18. doi:10.1037/0022-3514.56.1.5

Diener, E., Fraser, S. C., Beaman, A. L., & Kelem, R. T. (1976). Effects of deindividuation variables on stealing among Halloween trick-or-treaters. *Journal of Personality and Social Psychology, 33,* 178–183. doi:10.1037/0022-3514.33.2.178

Dijksterhuis, A., Preston, J., Wegner, D. M., & Aarts, H. (2008). Effects of subliminal priming of self and God on self-attribution of authorship for events. *Journal of Experimental Social Psychology, 44,* 2–9. doi:10.1016/j.jesp.2007.01.003

Dweck, C. S., Chiu, C.-Y., & Hong, Y.-Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry, 6,* 267–285. doi:10.1207/s15327965pli0604_1

Finkel, E. J., & Campbell, W. K. (2001). Self-control and accommodation in close relationships: An interdependence analysis. *Journal of Personality and Social Psychology, 81,* 263–277. doi:10.1037/0022-3514.81.2.263

Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not into temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology, 84,* 296–309. doi:10.1037/0022-3514.84.2.296

Fishbach, A., & Shah, J. Y. (2006). Self-control in action: Implicit dispositions toward goals and away from temptations. *Journal of Personality and Social Psychology, 90,* 820–832. doi:10.1037/0022-3514.90.5.820

Fishbach, A., & Trope, Y. (2005). The substitutability of external control and self-control. *Journal of Experimental Social Psychology, 41,* 256–270. doi:10.1016/j.jesp.2004.07.002

Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology, 84,* 148–164. doi:10.1037/0022-3514.84.1.148

Fitzsimons, G. M., & Finkel, E. J. (2010). Interpersonal influences on self-regulation. *Current Directions in Psychological Science, 19,* 101–105. doi:10.1177/0963721410364499

Fitzsimons, G. M., & Finkel, E. J. (2011). Outsourcing self-regulation. *Psychological Science, 22,* 369–375. doi:10.1177/0956797610397955

Gallup International. (1999). Religion in the world at the end of the millennium. Retrieved from http://www.gallup-international.com/ContentFiles/millennium15.asp

Gendler, T. S. (2008). Alief and belief. *Journal of Philosophy, 105,* 634–663.

Gervais, W. M., & Norenzayan, A. (2009). [Priming God increases public self-awareness]. Unpublished raw data, University of British Columbia, Vancouver, British Columbia, Canada.

Gilbert, D. T., Brown, R. P., Pinel, E. C., & Wilson, T. D. (2000). The illusion of external agency. *Journal of Personality and Social Psychology, 79,* 690–700. doi:10.1037/0022-3514.79.5.690

Giménez-Dasí, M., Guerrero, S., & Harris, P. L. (2005). Intimations of immortality and omniscience in early childhood. *European Journal of Developmental Psychology, 2,* 285–297. doi:10.1080/17405620544000039

Goldfinger, E. (1996). *Basic ideas of secular humanistic Judaism.* Lincolnshire, IL: International Institute for Secular Humanistic Jews.

Gollwitzer, P. M., & Oettingen, G. (2011). Planning promotes goal striving. In K. D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (2nd ed., pp. 162–185). New York, NY: Guilford Press.

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in Experimental Social Psychology, 38,* 69–119. doi:10.1016/S0065-2601(06)38002-1

Graham, J., & Haidt, J. (2010). Beyond beliefs: Religions bind individuals into moral communities. *Personality and Social Psychology Review, 14,* 140–150. doi:10.1177/1088868309353415

Gray, H. M., Gray, K., & Wegner, D. M. (2007, February 2). Dimensions of mind perception. *Science, 315,* 619. doi:10.1126/science.1134475

Gray, K., & Wegner, D. M. (2010). Blaming God for our pain: Human suffering and the divine mind. *Personality and Social Psychology Review, 14,* 7–16. doi:10.1177/1088868309350299

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology, 85,* 197–216. doi:10.1037/0022-3514.85.2.197

Guiso, L., Sapienza, P., & Zingales, L. (2003). People's opium? Religion and economic attitudes. *Journal of Monetary Economics, 50,* 225–282. doi:10.1016/S0304-3932(02)00202-7

Hackney, C. H., & Sanders, G. S. (2003). Religiosity and mental health: A meta-analysis of recent studies. *Journal for the Scientific Study of Religion, 42,* 43–55. doi:10.1111/1468-5906.t01–1-00160

Hall, D. L., Matz, D. C., & Wood, W. (2010). Why don't we practice what we preach? A meta-analytic review of religious racism. *Personality and Social Psychology Review, 14,* 126–139. doi:10.1177/1088868309352179

Hayward, R. D., & Kemmelmeier, M. (2007). How competition is viewed across cultures: A test of four theories. *Cross-Cultural Research, 41,* 364–395.

Heckhausen, H. (1977). Achievement motivation and its constructs: A cognitive model. *Motivation and Emotion, 1,* 283–329. doi:10.1007/BF00992538

Heckhausen, H. (1991). *Motivation and action.* Heidelberg, Germany: Springer-Verlag.

Hill, P. C., & Pargament, K. I. (2003). Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *American Psychologist, 58,* 64–74. doi:10.1037/0003-066X.58.1.64

Hugenberg, K., & Bodenhausen, G. V. (2003). Facing prejudice: Implicit prejudice and the perception of facial threat. *Psychological Science, 14,* 640–643. doi:10.1046/j.0956-7976.2003.psci_1478.x

Jensen-Campbell, L. A., & Graziano, W. G. (2005). The two faces of temptation: Differing motives for self-control. *Merrill-Palmer Quarterly, 51,* 287–314. doi:10.1353/mpq.2005.0014

Kapitan, T. (1991). Agency and omniscience. *Religious Studies, 27,* 105–120. doi:10.1017/S0034412500001359

Karau, S. J., & Williams, K. D. (1993). Social loafing: A meta-analytic review and theoretical integration. *Journal of Personality and Social Psychology, 65,* 681–706. doi:10.1037/0022-3514.65.4.681

Kay, A. C., Gaucher, D., McGregor, I., & Nash, K. (2010). Religious conviction as compensatory control. *Personality and Social Psychology Review, 14,* 37–48. doi:10.1177/1088868309353750

Kay, A. C., Gaucher, D., Napier, J. L., Callan, M. J., & Laurin, K. (2008). God and the government: Testing a compensatory control mechanism for the support of external systems. *Journal of Personality and Social Psychology, 95,* 18–35. doi:10.1037/0022-3514.95.1.18

Kay, A. C., Shepherd, S., Blatz, C. W., Chua, S. N., & Galinsky, A. D. (2010). For God (or) country: The hydraulic relation between government instability and belief in religious sources of control. *Journal of Personality and Social Psychology, 99,* 725–739. doi:10.1037/a0021140

Kerr, N. L. (1983). Motivation losses in small groups: A social dilemma analysis. *Journal of Personality and Social Psychology, 45,* 819–828. doi:10.1037/0022-3514.45.4.819

Kim, D. Y. (2003). Voluntary controllability of the Implicit Association Test (IAT). *Social Psychology Quarterly, 66,* 83–96. doi:10.2307/3090143

Klem, M. L., Wing, R. R., McGuire, M. T., Seagle, H. M., & Hill, J. O. (1997). A descriptive study of individuals successful at long-term maintenance of substantial weight loss. *American Journal of Clinical Nutrition, 66,* 239–246.

Koole, S. L., McCullough, M. E., Kuhl, J., & Roelofsma, P. H. M. P. (2010). Why religion's burdens are light: From religiosity to implicit self-regulation. *Personality and Social Psychology Review, 14,* 95–107. doi:10.1177/1088868309351109

Latané, B. (1981). The psychology of social impact. *American Psychologist, 36,* 343–356. doi:10.1037/0003-066X.36.4.343

Latané, B., Williams, K., & Harkins, S. (1979). Many hands make light work: Causes and consequences of social loafing. *Journal of Personality and Social Psychology, 37,* 822–832. doi:10.1037/0022-3514.37.6.822

Laurin, K., Fitzsimons, G. M., & Kay, A. C. (2011). Social disadvantage and the self-regulatory function of justice beliefs. *Journal of Personality and Social Psychology, 100,* 149–171. doi:10.1037/a0021343

Laurin, K., Kay, A. C., & Moscovitch, D. M. (2008). On the belief in God: Towards an understanding of the emotional substrates of compensatory control. *Journal of Experimental Social Psychology, 44,* 1559–1562. doi:10.1016/j.jesp.2008.07.007

Lawrence, R. T. (1997). Measuring the image of God: The God Image Inventory and the God Image Scales. *Journal of Psychology and Theology, 25,* 214–226.

Leary, M. R. (1995). *Self-presentation: Impression management and interpersonal behavior.* Boulder, CO: Westview.

McClelland, M. M., Cameron, C. E., Connor, C. M., Farris, C. L., Jewkes, A. M., & Morrison, F. J. (2007). Links between behavioral regulation and preschoolers' literacy, vocabulary, and math skills. *Developmental Psychology, 43,* 947–959. doi:10.1037/0012-1649.43.4.947

McCullough, M. E., & Willoughby, B. L. B. (2009). Religion, self-regulation, and self-control: Associations, explanations, and implications. *Psychological Bulletin, 135,* 69–93. doi:10.1037/a0014213

Metcalf, T. (2004). Omniscience and maximal power. *Religious Studies, 40,* 289–306. doi:10.1017/S0034412504007061

Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989, May 26). Delay of gratification in children. *Science, 244,* 933–938. doi:10.1126/science.2658056

Myers, D. G. (2000). The funds, friends, and faith of happy people. *American Psychologist, 55,* 56–67. doi:10.1037/0003-066X.55.1.56

Myrseth, K. O., Fishbach, A., & Trope, Y. (2009). Counteractive self-control: When making temptation available makes temptation less tempting. *Psychological Science, 20,* 159–163. doi:10.1111/j.1467-9280.2009.02268.x

Nagasawa, Y. (2003). Divine omniscience and knowledge *de se*. *International Journal for the Philosophy of Religion, 53,* 73–82. doi:10.1023/A:1023317625835

Newton, A. T., & McIntosh, D. N. (2010). Specific religious beliefs in a cognitive appraisal model of stress and coping. *International Journal for the Psychology of Religion, 20,* 39–58. doi:10.1080/10508610903418129

Norenzayan, A., & Lee, A. (2010). It was meant to happen: Explaining cultural variations in fate attributions. *Journal of Personality and Social Psychology, 98,* 702–720. doi:10.1037/a0019141

Norenzayan, A., & Shariff, A. F. (2008, October 3). The origin and evolution of religious prosociality. *Science, 322,* 58–62. doi:10.1126/science.1158757

Norenzayan, A., Shariff, A. F., & Gervais, W. M. (2009). The evolution of religious misbelief. *Behavioral and Brain Sciences, 32,* 531–532. doi:10.1017/S0140525X09991312

Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups.* Cambridge, MA: Harvard University Press.

Olson, M. A., & Fazio, R. H. (2006). Reducing automatically activated racial prejudice through implicit evaluative conditioning. *Personality and Social Psychology Bulletin, 32,* 421–433. doi:10.1177/0146167205284004

Porter, L. W., & Lawler, E. E. (1968). *Managerial attitudes and performance.* Homewood, IL: Dorsey Press.

Randolph-Seng, B., & Nielsen, M. E. (2007). Honesty: One effect of primed religious representations. *International Journal for the Psychology of Religion, 17,* 303–315. doi:10.1080/10508610701572812

Roes, F. L., & Raymond, M. (2003). Belief in moralizing gods. *Evolution and Human Behavior, 24,* 126–135. doi:10.1016/S1090-5138(02)00134-4

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55,* 68–78. doi:10.1037/0003-066X.55.1.68

Saroglou, V. (2002). Religion and the five factors of personality: A meta-analytic review. *Personality and Individual Differences, 32,* 15–25. doi:10.1016/S0191-8869(00)00233-6

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). San Diego, CA: Academic Press.

Serdula, M. K., Mokdad, A. H., Williamson, D. F., Galuska, D. A., Mendlein, J. M., & Heath, G. W. (1999). Prevalence of attempting weight loss and strategies for controlling weight. *Journal of the American Medical Association, 282,* 1353–1358. doi:10.1001/jama.282.14.1353

Shah, J. (2003). The motivational looking glass: How significant others implicitly affect goal appraisals. *Journal of Personality and Social Psychology, 85,* 424–439. doi:10.1037/0022-3514.85.3.424

Shariff, A. F., & Norenzayan, A. (2007). God is watching you: Priming God concepts increases prosocial behavior in an anonymous economic game. *Psychological Science, 18,* 803–809. doi:10.1111/j.1467-9280.2007.01983.x

Shepperd, J. A. (1993). Productivity loss in performance groups: A motivational analysis. *Psychological Bulletin, 113,* 67–81. doi:10.1037/0033-2909.113.1.67

Srull, T. K., & Wyer, R. S. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology, 37,* 1660–1672. doi:10.1037/0022-3514.37.10.1660

Stapel, D. A., Joly, J. F., & Lindenberg, S. (2010). Being there with others: How people make environments norm-relevant. *British Journal of Social Psychology, 49,* 175–187. doi:10.1348/000712609X436453

Steffens, M. C. (2004). Is the Implicit Association Test immune to faking? *Experimental Psychology, 51,* 165–179. doi:10.1027/1618-3169.51.3.165

Stillman, T. F., Tice, D. M., Fincham, F. D., & Lambert, N. M. (2009). The psychological presence of family improves self-control. *Journal of Social and Clinical Psychology, 28,* 498–529. doi:10.1521/jscp.2009.28.4.498

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72,* 271–324. doi:10.1111/j.0022-3506.2004.00263.x

Taylor, A., & MacDonald, D. A. (1999). Religion and the five factor model of personality: An exploratory investigation using a Canadian university

sample. *Personality and Individual Differences, 27,* 1243–1259. doi: 10.1016/S0191-8869(99)00068-9

Thuesen, P. J. (2011). *Predestination: The American career of a contentious doctrine.* New York, NY: Oxford University Press.

Trope, Y., & Fishbach, A. (2000). Counteractive self-control in overcoming temptation. *Journal of Personality and Social Psychology, 79,* 493–506. doi:10.1037/0022-3514.79.4.493

Vail, K. E., Rothschild, Z. K., Weise, D. R., Solomon, S., Pyszczynski, T., & Greenberg, J. (2010). A terror management analysis of the psychological functions of religion. *Personality and Social Psychology Review, 14,* 84–94. doi:10.1177/1088868309351165

Vroom, V. H. (1964). *Work and motivation.* New York, NY: Wiley.

Weber, M. (1976). *The Protestant ethic and the spirit of capitalism.* New York, NY: Scribner. (Original work published 1930)

Whittington, B. L., & Scher, S. J. (2010). Prayer and subjective well-being: An examination of six different types of prayer. *International Journal for the Psychology of Religion, 20,* 59–68. doi:10.1080/10508610903146316

Wiktionary: Frequency lists. (2011, May 10). In *Wiktionary.* Retrieved from http://en.wiktionary.org/w/index.php?title=Wiktionary:Frequency_lists&oldid=13077273

Wine, S. T. (1996). *Judaism beyond God: A radical new way to be Jewish.* Jersey City, NJ: KTAV Publishing House and Society for Humanistic Judaism.

Worthington, E. L., Jr., Bursley, K., Berry, J. T., McCullough, M., Baier, S. N., Berry, J. W., . . . Canter, D. E. (2001). Religious commitment, religious experiences, and ways of coping with sexual attraction. *Marriage and Family: A Christian Journal, 4,* 411–423.

Wrosch, C., Dunne, E., Scheier, M. F., & Schulz, R. (2006). Self-regulation of common age-related challenges: Benefits for older adults' psychological and physical health. *Journal of Behavioral Medicine, 29,* 299–306. doi:10.1007/s10865-006-9051-x

Zhong, C.-B., Bohns, V. K., & Gino, F. (2010). Good lamps are the best police: Darkness increases dishonesty and self-interested behavior. *Psychological Science, 21,* 311–314. doi:10.1177/0956797609360754

Received February 7, 2011
Revision received June 7, 2011
Accepted June 13, 2011 ■