

## PERSONALITY PROCESSES AND INDIVIDUAL DIFFERENCES

## Moral Self-Regulation, Moral Identity, and Religiosity

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The association between religiosity and morality identified in self-reports has received limited support from studies of actual behavior. We propose that religiosity variables are likely to contribute to moral behavior in the context of moral self-regulation. Five studies examined the prediction that people who strongly endorse the items “I try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion” and people who report strong God belief would exhibit heightened moral emotions and prosocial behaviors after moral self-image (MSI) threats. Study 1 ( $N = 169$ ) demonstrated that considering a recent moral transgression (the manipulation used in Studies 2–5) resulted in lower MSI, regardless of participants’ levels of endorsement of religion-related items. Study 2 ( $N = 207$ ) showed that following a threat to MSI, religiosity variables predicted heightened negative affect and self-conscious moral emotions. Studies 3 through 5 (combined  $N = 616$ ) showed that following MSI threats, individuals endorsing intrinsic religiosity and God belief items showed increased prosocial task completion (Studies 3 and 5) and decreased cheating on a word-solving task (Study 4). Study 5 demonstrated that moral identity accounted for the role of religiosity variables in promoting moral self-regulation following MSI threat. Noting that these findings are limited to people representative of the participants in these samples (Mechanical Turk workers; University of Missouri undergraduate students), and to the precise measures and manipulations used, implications of these findings and constraints on their generalizability are discussed.

**Keywords:** moral self-regulation, morality, prosociality, religion

**Supplemental materials:** <http://dx.doi.org/10.1037/pspp0000207.supp>

Religion is frequently thought to promote moral behavior. Within the United States, belief in God is often regarded as essential for morality, and children are perceived as more likely to be moral if raised in a religious family (Pew Research Center, 2014; Farkas, Johnson, & Foleno, 2001). Indeed, the stereotype that religious individuals are more moral than the nonreligious appears to be held by the religious and nonreligious alike (Gervais, Shariff, & Norenzayan, 2011). Some research provides support for this stereotype: Religiosity is associated with peer and self-reports of various prosocial behaviors (e.g., Monsma, 2007; Myers, 2009; Putnam & Campbell, 2010; Saroglou, Pichon, Trompette, Ver-

schueren, & Dernelle, 2005). Yet, a number of issues (e.g., the existence of this stereotype, socially desirability bias; Galen, 2012) render conclusions based on these methods equivocal (though see Myers, 2012; Saroglou, 2012). A crucial step in understanding the religion–prosociality association is attending to the distinction between self-report and actual behavior. A recent meta-analysis showed no overall relationship between religion and *actual* prosocial behavior; rather, religion predicted *self-reported* prosocial behavior and moral identity (Kramer & Shariff, 2018).

Acknowledging the boundaries of religious prosociality, Saroglou (2013) proposed that religiosity relates to a “limited prosociality” that is driven by contextual factors. In support of this notion, individual differences in religiosity seem to predict prosocial behavior only (a) when reputational concerns are activated (e.g., Batson, Schoenrade, & Ventis, 1993; Norenzayan & Shariff, 2008), (b) when the recipient of a prosocial act is an ingroup member (e.g., Sosis & Ruffle, 2003; Soler, 2012), and (c) when religious concepts or ideals are salient (e.g., the “Sunday” effect; Malhotra, 2010), especially through priming (e.g., Shariff, Willard, Andersen, & Norenzayan, 2016). Essentially, these considerations indicate that the most fruitful question to pursue in the religiosity–prosociality link is not necessarily *if* but *when* (e.g., Greenwald, Pratkanis, Leippe, & Baumgardner, 1986) religiosity will predict

This article was published Online First July 19, 2018.

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We would like to thank Jamie Arndt, Glenn Baker, Adam Cohen, Kathryn Johnson, Benoît Monin, and Linda Skitka for their helpful comments on earlier versions of this paper. We would also like to thank our research assistants for content analyzing participants’ essays from Studies 2 through 5.

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such behavior: What circumstances facilitate religiosity's role in fostering moral or prosocial acts?

Placing religiosity in the context of moral-self-regulation, we propose that religious motivations toward life (i.e., strongly agreeing with the items "I try hard to live all my life according to my religious beliefs" and "My whole approach to life is based on my religion") will predict emotional reactions and compensatory prosocial acts following threats to moral self-image (though these motivations may be unrelated to such outcomes in the absence of threat). Although being a moral person is a relatively common goal, religious faith provides an especially rich (and multifaceted) milieu for the pursuit of this goal, enhancing both the importance people place on the moral domain and their reactions to moral failures. Measures of religiosity are associated with valuing moral traits and with viewing oneself as moral (e.g., Furrow, King, & White, 2004; Hardy, Walker, Rackham, & Olsen, 2012; Johnston, Sherman, & Grusec, 2013; Vitell et al., 2009). As such, religious people might be especially reactive to information that threatens their moral self-image. Although it may be unrelated to moral behavior in general, in the face of moral self-image threats, religiosity should predict negative emotions and compensatory moral behaviors. Next, we briefly sketch out the process of moral self-regulation (considering the roles of moral identity and religiosity in this process) and consider potential explanatory variables for the association between religiosity and moral self-regulation.

### Moral Self-Regulation

Research on moral self-regulation emphasizes that people strive to maintain their moral identity, a self-schema involving moral traits, such as honesty, trustworthiness, and compassion (Aquino & Reed, 2002). Rather than constantly striving for moral perfection, it appears that people endeavor to maintain an acceptable level of morality and will engage in moral or immoral behavior in response to fluctuations in moral self-image (Nisan, 1991; Merritt, Effron, & Monin, 2010). For example, recalling an occasion when one acted immorally may propel compensatory behavior to restore moral self-image (Zhong, Liljenquist, & Cain, 2009), a process we refer to as *moral compensation* (sometimes termed moral cleansing; Sachdeva, Iliev, & Medin, 2009). In contrast, recalling or simply imagining occurrences of moral behavior can encourage morally questionable actions (termed *moral licensing*), which is speculated to be attributable to a boost in moral self-image (e.g., Merritt et al., 2010; Sachdeva et al., 2009). These patterns of responses are thought to be attributable to the effects of the manipulations on moral emotions and moral self-image.

This body of evidence provides the basis for a general sketch of moral self-regulation. As with any self-regulatory model (e.g., Carver & Scheier, 2008), moral self-regulation includes a goal (to maintain one's moral self-image) and one's current state. In the case of moral compensation that current state would be influenced by a reminder of one's recent immoral behavior. The discrepancy between one's goal and the current state leads to affective reactions (self-conscious moral emotions) and behaviors (moral acts) aimed at reducing that gap. We propose that because of their link to moral identity as well as other aspects of moral monitoring, religious motivations toward life may motivate moral emotions and moral acts after moral self-image threats.

### Moral Identity and Moral Self-Regulation

At the center of moral self-regulation is the goal to be a moral person. People differ in the degree to which they value this goal. The importance placed on any goal can be expected to influence self-regulatory processes, leading individuals to prioritize important goals over others (Schmidt & DeShon, 2007) and to closely monitor progress on such goals (Harkin et al., 2016). In the context of moral self-regulation, individuals who strongly value moral identity should be especially responsive to information about potential weaknesses in the moral domain, and they should seek to rectify these shortcomings when they emerge. Indeed, Mulder and Aquino (2013) found that, following an immoral behavior, people who endorsed a high (vs. low) moral identity were more likely to behave morally and to engage in more efforts to restore moral self-image. In contrast, people who placed a low value on moral identity exhibited behavior more consistent with their first (immoral) act (Mulder & Aquino, 2013). Similarly, Effron (2014) found that after anticipating a potential threat to moral identity, people with high (vs. low) moral identity were more inclined to feel anxious and to attempt to bolster their moral credentials.

The preceding studies demonstrate that people who strongly value moral identity are particularly reactive to moral self-image threats. Reminders of shortcomings in the moral domain represent a larger discrepancy between one's goals and one's current state for people with high moral identity in comparison to those who place a lower priority on the moral domain. Thus, we may expect that people with high moral identity will behave especially morally following a threat to moral self-image to reduce the gap between moral goals and one's current (deficient) moral standing. Next, we consider the nature of the link between moral identity and religiosity.

### Religiosity and Moral Identity

Most contemporary religions emphasize the importance of moral values (e.g., Beit-Hallami & Argyle, 1997; Norenzayan & Shariff, 2008), potentially strengthening the importance religious people place on moral traits and behaviors. Several studies have demonstrated that religiosity is positively associated with *self-reported* prosocial tendencies and values, including altruistic behavior, benevolence, and empathy, as well as with moral identity and moral self-perceptions in adults (e.g., Johnston et al., 2013; Saroglou et al., 2005; Saroglou & Muñoz-García, 2008; Saroglou, Delpierre, & Dernelle, 2004; Vitell et al., 2009; Ward & King, 2018) and adolescents (Furrow et al., 2004; Hardy et al., 2012). Note that in some of these studies, religious prosociality extended primarily to ingroup recipients (Saroglou et al., 2004; Saroglou et al., 2005), consistent with the limited, contextual nature of religious prosociality.

These results suggest that religiosity is associated with highly valuing moral identity and moral goals. However, the fact that religiosity shares a well-documented association with impression management (meta-analytic  $r = .31$ , in Sedikides & Gebauer, 2010) calls into question the veracity of the link between self-reports of religiosity and prosocial/moral outcomes (e.g., Galen, 2012; McKay & Whitehouse, 2015; Shariff, 2015). Additionally, religion has been conceptualized as providing a means of self-enhancement (Sedikides & Gebauer, 2010). Research has shown that religious people view themselves as better than others on both

nonmoral and moral characteristics (e.g., Gebauer, Sedikides, & Schrade, 2017; Ludeke & Carey, 2015; Rowatt, Ottenbreit, Neselroade, & Cunningham, 2002) and even inflate their own intrinsic religiosity (Jones & Elliott, 2017). Thus, religious individuals may endorse moral traits and values in a socially desirable and self-enhancing fashion. Another possibility is that religious people's high reported moral values may stem from endorsing a stereotype that they are moral because they are religious rather than based on their actual behavior (Galen, 2012).

Although social desirability bias may help explain the association between religiosity and moral identity, research has shown that even when controlling for socially desirability, religiosity is still significantly associated with moral values and prosocial behavior (Hansen, Vandenberg, & Patterson, 1995; Rowatt et al., 2002; Saroglou et al., 2005; Ward & King, 2018).<sup>1</sup> There is reason to believe, then, that the link between religion and prosocial/moral outcomes is not *solely* attributable to desirability bias.

This is not to say that religious people's valuation of moral traits (or their desire to compensate after a moral failure) is necessarily altruistically motivated or purely genuine. Religious people's motivation for moral acts (and endorsement of moral values) may be driven by egoistic concerns, such as feeling or appearing helpful, rather than broader concern for other people (e.g., Batson et al., 1989, 1993). Religious people's valuation of moral traits and behavior could reflect genuine, altruistic concerns, or alternatively, serve a host of self-interested goals, such as feeling better about oneself, maintaining a good reputation, or avoiding punishment in the afterlife.

Note that even if the high moral identity reported by religious people is a result of self-enhancement, stereotypical beliefs (i.e., one is moral because they are religious), or egoistic/defensive motives, these explanations would similarly suggest that reminders of moral failings would be especially motivating for religious individuals. These perspectives on the link between moral identity and religiosity would seem to predict, then, that religious people may be prone to engage in compensatory moral behaviors because of their high valuation of this domain and their need to reaffirm their belief that they are moral. Of course, nonreligious people may also have strong moral identities, which may similarly motivate compensatory moral behavior in the face of moral self-image threats.

In addition to the possibility that moral identity explains the link between religiosity and moral self-regulation, there are other routes by which religiosity might influence this process, as we now consider.

## Monitoring Morality

The high importance religious people place on the moral domain would be expected to facilitate the relationship between goal progress and emotions (Carver & Scheier, 2008). Religiosity is associated with experiencing more self-conscious moral emotions, including guilt proneness (e.g., Albertsen, O'Connor, & Berry, 2006; Luyten, Corveleyn, & Fontaine, 1998; Walinga, Corveleyn, & van Saane, 2005) and, less regularly, shame proneness (e.g., Cohen, Wolf, Panter, & Insko, 2011), suggesting that religious people may find moral failures especially distressing.

Another key aspect of any regulatory process is monitoring one's progress. The manner in which religious people monitor

moral behavior diverges from the nonreligious in ways that may predict heightened responses to moral failures. Many religions endorse a belief in supernatural deities that observe human behavior and discipline those who transgress moral rules (e.g., Norenzayan & Shariff, 2008; Purzycki, 2013). These supernatural deities provide a moralistic audience that may promote self-control by intensifying awareness of one's behavior (e.g., Baumeister, Bauer, & Lloyd, 2010; Gervais & Norenzayan, 2012; McCullough & Willoughby, 2009) as well as fear of possible penalties one may face in an afterlife. This line of reasoning rests on an idea of God as punitive. People can have a broad range of implicit and explicit perceptions of God (e.g., Hall & Fujikawa, 2013; Wood et al., 2010), and they may think of God as comforting and forgiving in the face of moral transgressions. Nevertheless, past research has shown that believing that God is punitive (vs. loving and forgiving) can inhibit immoral behavior and promote prosocial behavior (Shariff & Norenzayan, 2011; Purzycki et al., 2016). Thus, believing that God has a negative reaction to one's immorality seems most apt to spur compensatory moral behavior. Of course, not all religions promote a belief in an afterlife or in a supernatural deity that monitors behavior, so there may be differences across religious groups in attention to these concerns. However, in the present context we use "religiosity" to refer to the beliefs and practices of the dominant religious groups in America (Christians, Catholics, & Protestants), as these individuals are the majority of our religious sample (see Table 1).

In addition to supernatural monitoring, religions often connect people in small, closely knit communities that are aimed toward prosociality (e.g., Graham & Haidt, 2010; Durkheim, 1915/1965). For some religious people, concerns of judgment from one's community may be especially salient when considering moral failures, which may prompt them to behave morally to allay these concerns.

The preceding examination indicates that although religion does not generally promote morality in the absence of contextual factors, it may influence the process of moral self-regulation. When a moral failure is considered, religious people may be more prone to experience self-conscious moral emotions and to behave morally to compensate for these failures. A strong sense of moral identity (and potential concerns over self-enhancement and stereotype consistency in the moral domain), belief in a supernatural deity who monitors behavior, and concern about judgment from one's religious community may motivate religious people to be especially reactive to moral failures. Importantly, evidence is lacking that these features of religion promote more moral behavior among religious people overall (e.g., Galen, 2012; Saroglou, 2013). We suggest that they may spur moral behavior among people with high religiosity after the consideration of moral failures.

<sup>1</sup> In studies controlling for socially desirable responding, intrinsic religiosity was found to still significantly predict self-reported altruism and empathy (Saroglou et al., 2005), volunteerism (Hansen et al., 1995), and adherence to biblical commands (Rowatt et al., 2002). MacLean and colleagues (2004) found that controlling for socially desirable responding, the association between intrinsic religiosity and self-reported altruism dropped to non-significance ( $r = .28, p < .05$  zero-order correlation;  $r = .23, p > .05$  partialling out SDR); however, this change in significance may have been attributable to low power ( $N = 60$ ) rather than a substantial change in the magnitude of association.



Table 1  
*Religious Demographic Information for All Studies*

Religious affiliation	Study				
	1	2	3	4	5
Catholic or Greek Orthodox	14	18	26	23	57
Christian (non-Catholic)	37	36	9	30	76
Protestant	17	16	32	13	7
Jewish	1	2	3	2	5
Buddhist	4	4	0	5	2
Hindu	1	0	3	3	1
Muslim	1	0	2	3	0
Mormon or LDS	1	4	2	2	1
American Indian or Native American Religion	0	0	2	1	0
Atheist (nonbelieving)	39	50	54	59	16
Agnostic (uncertain about the existence of God)	39	46	42	50	44
Spiritual but not religious	—	27	16	—	—
Other	15	4	9	6	9
Not reported	0	0	0	0	2
Total <i>N</i> by Study	169	207	200	197	220

*Note.* In Studies 2 and 3 there was a “Spiritual but not religious” category, which was excluded from other studies.

### Why May Religiosity Influence Moral Self-Regulation?

The foregoing discussion highlights the importance of considering the potential mechanisms that might explain the association between religiosity and moral behavior in the context of moral self-image threat. If it is the case that such threat spurs the religious to engage in compensatory behaviors, is this association attributable to secular factors (e.g., valuing moral identity) or those that are related to religious beliefs and traditions (e.g., fear of God’s judgment or consequences in an afterlife)? We consider two classes of explanatory variables: first, individual difference variables that are associated with religiosity and thus may explain its contribution to moral self-regulation; and second, variables that might occur in response to moral self-image threat and mediate the link between that threat and moral compensation.

### Individual Differences That May Explain Religious Moral Compensation

Religiosity measures are correlated with individual difference variables that may explain the association between religiosity and moral self-regulation proposed here. These variables may function as “third” variables that explain the role of religiosity variables on moral self-regulation. We tested two of these. First, based on the notion that compensatory moral behavior reflects stronger moral identity and valuation of morality among the religious, we tested whether moral contingencies of self-worth (Study 4) or moral identity (Study 5) explained the association between religiosity and moral compensation. For people with high moral identity, threats to moral self-image may represent a larger discrepancy between one’s moral goals and one’s current state, thus promoting a stronger desire to recompense for one’s transgression.

Another individual difference that might explain the role of religiosity in moral compensation is trait agreeableness. Agreeableness involves a disposition toward being trusting and altruistic as well as a tendency to get along well with others (Graziano, Habashi, Sheese, & Tobin, 2007). Agreeableness has a well-

documented association with prosocial behavior (e.g., Caprara, Alessandri, Di Giunta, Panerai, & Eisenberg, 2010; Graziano et al., 2007) and with religion (e.g., Saroglou, 2002; Taylor & MacDonald, 1999).<sup>2</sup> We have argued that people who endorse strong religious motivations in life will respond more keenly to their own moral failings. Agreeable individuals (who are also likely to be religious) may respond similarly. Thus, we tested whether agreeableness, rather than religiosity variables, predicts moral self-regulation following moral self-image threat (Studies 3 and 4).

### Mediators That May Explain Religious Moral Compensation

In addition to moral identity and agreeableness, the present studies tested potential mediators that might be expected to change in response to the moral self-image manipulation and explain the association between religiosity and moral outcomes following the manipulation. The mediators we considered are by no means exhaustive of the reactions people may have to moral failings. We focused on those most likely to spur compensatory moral behavior.

People with strong religiosity (particularly those from Christian denominations) value living up to God’s expectations and having a good afterlife. Reflecting on a moral transgression may lead such individuals to think that God is dissatisfied or disappointed with them or that they may have compromised their chances of getting into heaven. These thoughts may, in turn, spur moral behavior among the religious. In addition, because religious communities often involve social surveillance of behaviors of moral significance (e.g., Graham & Haidt, 2010), contemplating moral failures may lead religious people who are part of these communities to become concerned about disapproval from their religious community. This concern may encourage heightened moral behavior to assuage these worries and reaffirm one’s moral standing. Certainly, not all moral transgressions will be known to others, so concern of judgment from others may only be relevant to a portion of religious people, but it is nevertheless a potential moral motivator (Graham & Haidt, 2010). We tested whether the moral self-image threat led to heightened fear of judgment from God (i.e., in general or in the afterlife), from one’s religious community, from people in general, and from oneself, as well as whether such concerns mediated the relationship between religiosity and prosocial behavior following a threat to moral self-image (Study 5).

### Overview and Predictions

Prior to testing the prediction that religiosity influences moral self-regulation, we sought to establish an empirical context for the operationalizations we employed. First, Preliminary Studies 1 and 2 present evidence for the validity of the specific intrinsic religiosity items and God belief item that would be used in subsequent studies. Second, Study 1 provided a foundation for the subsequent experiments by examining whether a moral self-image threat (the

<sup>2</sup> Ludeke & Carey (2015) found that the association between religiosity and overclaiming agreeableness was explained by socially desirable responding and the perceived desirability of agreeableness, suggesting this association is influenced by desirability bias.

manipulation used in all subsequent studies) lowers moral self-image, as past research has assumed. Moreover, this study sought to demonstrate that people would respond similarly to this manipulation regardless of their levels of self-reported religiosity and God belief. The remaining studies tested the prediction that the moral self-image threat would amplify the relationship between religiosity variables and negative emotions (Study 2) as well as diverse morally relevant behaviors (Studies 3 through 5). We predicted that following a moral self-image threat, people who strongly agree with the items “I try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion” and who strongly believe in God would exhibit heightened negative emotions and compensatory prosocial/moral behaviors. We did not expect religiosity variables to relate to these outcomes in the control condition.

In Studies 3 through 5, we also tested explanatory variables (individual differences measured premanipulation) and mediators (measured postmanipulation) that may explain the association between religiosity variables and moral behavior following a threat to moral self-image. Studies 3 and 4 examined agreeableness. In addition, two measures of valuing morality were included in Studies 4 (staking one’s self-worth on the moral domain) and 5 (moral identity). Study 5 examined mediators that have previously been theorized to influence moral behavior among religious people, including fears of judgment from one’s religious community and God. Before describing these studies, we review the preliminary studies noted above.

### Preliminary Studies: Operationalizing Religiosity

Measurement concerns are a longstanding issue in the psychology of religion (e.g., Kirkpatrick & Hood, 1990; Gorsuch, 1984). Religiosity can encompass a variety of constructs, ranging from beliefs and behavior (e.g., the frequency of church attendance) to the strength of commitment and motivation toward one’s religion (e.g., intrinsic religiosity). In the psychology of religion, intrinsic religiosity has been considered “the sine qua non theory about what it means to be appropriately and truly religious” (Cohen et al., 2017, pp. 1724–1725). We thus thought it was the most critical measure of religion to include in this program of research. To assess intrinsic religiosity in the present studies, we included items from the intrinsic subscale of the Revised Intrinsic/Extrinsic Religiosity Scale (Gorsuch & McPherson, 1989) because it is the most well-validated and widely used measure of religious motivation available and because the items on this scale are applicable to a range of religious affiliations (e.g., Cohen et al., 2017; Hill, 2005).

In addition to intrinsic religiosity, other commonly used measures of religion in the literature on morality and prosociality include religious affiliation, belief in God, church attendance, and self-reported general religiosity (e.g., Galen, 2012). Although religiosity measures tend to be highly related, they can differentially predict outcomes (e.g., Hill & Pargament, 2003), so it was important to include multiple operationalizations of religiosity in the present studies. Accordingly, in addition to intrinsic religiosity, we included measures of belief in God and religious affiliation in all studies. Across studies, we predicted that the intrinsic religiosity and God belief items would be the strongest predictors of compensatory moral behavior and negative emotions following a threat

to moral self-image (i.e., recollection of a moral transgression). People who strongly value religion as a guiding motivator in life and who ardently believe in God are more likely to be attentive to their religion’s goals than religiously affiliated people who are less committed to their religious worldview. Because we treated religious affiliation as a dichotomous predictor, we did not expect it to have the same predictive power as continuous religiosity variables. Analyses probing the effects of religious affiliation (conducted within a merged sample of key studies to maximize power) are included following the results of Study 5.

For some of the experimental studies, it was crucial that our religiosity variables were brief because it would be imprudent to administer long self-report measures of religiosity before manipulations (i.e., potentially priming people to behave morally to comport with religious standards). Several studies have indicated that religious people act more morally when thoughts of God and religion are primed (e.g., Shariff et al., 2016), which may happen after long assessments of religion. We also wanted to avoid administering religiosity measures at the end of the studies with behavioral dependent variables, as it was possible that the moral self-image threat manipulation and morally relevant behavioral tasks (prosocial/cheating) would alter reports of religiosity. To circumvent these problems, we used the data from the preliminary studies to identify a brief set of items that were strongly correlated with other religion measures as well as with moral identity and values.

Relying on a continuous measure of religiosity (rather than religious affiliation) requires that we ensure low scores on such a measure mean similar things for nonbelievers (i.e., atheists/agnostics) and those who are religiously affiliated. We addressed this empirical question in Preliminary Study 1. Rather than excluding all nonbelievers from analyses (as is sometimes done in studies of religiosity, Galen, 2012) or alternatively, relying only on categorical variables, we examined whether, among those who report low levels of intrinsic religiosity, nonbelievers and the religiously affiliated differed substantially in terms of moral identity. Findings in the favor of the null (of no difference) would allow us to use a continuous religiosity variable in the subsequent studies, which would maximize the power of all studies.

Because of disagreement surrounding the optimal way to operationalize and measure religion and religiosity (e.g., Kirkpatrick & Hood, 1990; Gorsuch, 1984), as well as the imprecise nature of the intrinsic religiosity construct (e.g., Donahue, 1985; Kirkpatrick & Hood, 1990; Meadow & Kahoe, 1984), throughout the present studies and results we refer specifically to the item content of the intrinsic religiosity and God belief items we employed, rather than refer to these as religiosity or religion, broadly construed. We adopted abbreviations to simplify the presentation of results for these religiosity variables. Henceforth, we use the label “M2IR” to refer to the mean of two intrinsic religiosity items: “I try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion” (from Revised Intrinsic/Extrinsic Religiosity Scale; Gorsuch & McPherson, 1989; in Study 5 the label changes to M5IR to reflect additional items). We also refer to these items as reflecting a “religious motivation toward life,” consistent with theorizing and classification of intrinsic religiosity as a motivational approach to religion (e.g., Hill & Edwards, 2013; Hunt & King, 1971; Gorsuch, 1994). We will use the label “GB” to refer to the strength of belief in God (item adapted

from Gervais & Norenzayan, 2012). Throughout the studies, we also use a 3-item composite of standardized M2IR and GB items, referred to as "M2IRGB," representing an aggregate measure of religious life motivations and belief in God.

Preliminary Study 1 examined the association between the brief religiosity variables we planned to use in the subsequent studies (M2IR, GB, and M2IRGB) and moral identity, as well as how these associations compared with those for other operationalizations of religiosity (extrinsic religiosity and religious affiliation in particular). Preliminary Study 2 sought to demonstrate that the brief religiosity variables—M2IR, GB, and M2IRGB—shared strong relationships with longer established measures of religiosity.

### Institutional Review Board Statement

All studies were approved by the Institutional Review Board at the University of Missouri-Columbia. Project titles and numbers are as follows: Personality and Everyday Judgment (#1210681), Attitudes and Beliefs (#2008242), Personality and Self-Perception (#1212435), Cognition and Personality (#1209815; #1210025), and Personality and Attitudes (#2004134).

### Preliminary Study 1

#### Method

Six hundred fourteen adults on Amazon Mechanical Turk (MTurk) completed this preliminary study online (refer to the [online supplemental materials](#) for full demographics). Responses with duplicate IP addresses were dropped for all but the first completion of the study; final  $N = 605$ . Participants who had completed similar experiments to this on our MTurk account were blocked from participating in this study as well as in the subsequent studies (using worker identification codes). Thus, there are no duplicate participants across studies. Although a range of religious affiliations were represented in this sample, most religious participants were of Christian denominations (e.g., Christian, Protestant, Catholic) so in the present context "believers" or "religiously affiliated" refers primarily to Christians. Participants completed standard demographic information, a series of morality questionnaires, and items pertaining to religiosity. Unless otherwise specified, all items were rated on scales from 1 (*strongly disagree*) to 7 (*strongly agree*). Participants rated the Self-Importance of Moral Identity Scale (Aquino & Reed, 2002), featuring 10 statements about the importance of possessing moral traits (e.g., honest, fair, caring, trustworthy, compassionate). The scale has two subscales: internalization (e.g., "I strongly desire to have these characteristics") and symbolization (e.g., "I often wear clothes that identify me as having these characteristics"), which reflect internalizing the traits (possessing the traits) or symbolically representing them (appearing to possess the traits). In addition to this established scale, participants completed an ad hoc 7-item questionnaire (and other items not reported here) assessing "moral tracking," the attention given to whether one's behavior is moral (e.g., "I pay attention to whether my behavior is moral"). These items are shown in the [online supplemental materials](#).

Next, participants reported their religious affiliation, GB ("To what extent do you believe a Supreme being, God, exists?";

responses ranging from 1 = *God certainly does not exist* to 5 = *God certainly does exist*, adapted from Gervais & Norenzayan, 2012), and intrinsic/extrinsic religiosity. The Intrinsic/Extrinsic Religiosity Scale (Gorsuch & McPherson, 1989) includes eight items assessing intrinsic religiosity (e.g., "My whole approach to life is based on my religion," "It is important for me to spend time in private thought and prayer."). Six items assessed extrinsic religiosity that is either personal (e.g., "I pray mainly to gain relief and protection,") or social ("I go to church because it helps me make friends"). We aggregated across all extrinsic religiosity items.

### Results

**Evaluating brief religiosity variables.** We first used these preliminary data to identify key items tapping intrinsic religiosity. First, we examined the corrected item-total correlations for the intrinsic religiosity scale. The two items with the highest corrected item-total correlations were, "My whole approach to life is based on my religion," (corrected item-total  $r = .81$ ) and "I try hard to live all my life according to my religious beliefs" (corrected item-total  $r = .74$ ).<sup>3</sup> We computed the mean of these two items, M2IR, to use in analyses. To ensure that our operationalization of religion included belief in a supernatural deity (that is to ensure it captured believers and not simply "belong-ers"), we added the GB item to the composite, M2IRGB. The 3 items were rated on different scales, so they were standardized prior to being averaged to produce a composite,  $\alpha = .89$ .<sup>4</sup>

Table 2 shows the descriptive statistics and reliabilities for all scales as well as the correlations among the moral and religiosity variables. M2IRG, GB, and M2IRGB were strongly correlated with the full intrinsic religiosity scale and with other religiosity measures. In addition, as predicted, measures of religiosity were positively correlated with measures of moral identity and moral tracking.

To provide further empirical context for the use of M2IRGB and to justify excluding extrinsic religiosity from the main studies, we examined the extent to which the association between moral measures and extrinsic religiosity was explained by M2IRGB in regression models. When M2IRGB and extrinsic religiosity were both entered simultaneously into a regression model, only M2IRGB predicted moral tracking,  $\beta = .43, p < .001$ , for extrinsic religiosity,  $\beta = -.10, p = .07$ . When both were entered predicting the internalization of moral values, M2IRGB was a significant positive predictor,  $\beta = .32, p < .001$ , and extrinsic religiosity was a negative predictor,  $\beta = -.14, p = .02$ . Both M2IRGB,  $\beta = .19, p = .001$ , and extrinsic religiosity,  $\beta = .21, p < .001$ , were significantly independently predictive of the symbolization of moral values. The symbolization of moral values pertains to *appearing*, rather than acting, moral, and extrinsic religiosity pertains

<sup>3</sup> One of the two intrinsic religiosity items used in the composite ("My whole approach to life is based on my religion") was previously selected as the best single-item measure of this construct, being highly correlated with and representative of the full intrinsic religiosity scale (Gorsuch & McPherson, 1989). In addition, these two items are very similar to items used on other common religiosity measures (e.g., Religious Commitment Inventory, Worthington et al., 2003; Duke University Religion Index, Koenig, & Büssing, 2010).

<sup>4</sup> This same procedure was followed for calculating the M2IRGB composite variable in Studies 2 through 4.

Table 2  
Correlations Between Religiosity and Moral Variables, Preliminary Study 1

Variable	M2IRGB	IR	M2IR	ER	GB	RA	MT	IMV	SMV
M2IRGB	.86								
Intrinsic religiosity (IR)	.88**	.82							
M2IR	.96**	.89**	.88						
Extrinsic religiosity (ER)	.71**	.57**	.67**	.83					
God belief (GB)	.85**	.66**	.67**	.63**	—				
Religious affiliation (RA)	.76**	.62**	.69*	.68**	.73**	—			
Moral tracking (MT)	.36**	.38**	.37**	.21**	.26**	.24**	.88		
Internalized moral values (IMV)	.22**	.23**	.22**	.09*	.18**	.15**	.52**	.81	
Symbolic moral values (SMV)	.34**	.29**	.35**	.34**	.25**	.28**	.35**	.27**	.87
Means ( <i>SD</i> s)	—	3.86 (1.44)	3.31 (2.08)	2.85 (1.36)	3.62 (1.45)	—	4.53 (1.03)	6.03 (.98)	4.05 (1.32)

*Note.*  $N = 590$ . Coefficients on the diagonals (italicized) are alpha reliabilities. For religious affiliation, atheists/agnostics were coded as 0 and all other religious affiliations coded as 1. M2IR is the mean of the items: “My whole approach to life is based on my religion” and “I try hard to live all my life according to my religious beliefs” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989). The M2IRGB composite is the mean of these two items (first standardized) along with the standardized God belief item (adapted from Gervais & Norenzayan, 2012).

\*  $p < .05$ . \*\*  $p < .001$ .

to valuing religion as a means to an end, so it makes sense that these remained associated controlling for M2IRGB.

Similarly, to compare the continuous measure to religious affiliation, we next computed regression equations predicting moral identity measures from religious affiliation status and M2IRGB, simultaneously. In all analyses, the main effect of M2IRGB remained significant controlling for religious affiliation,  $\beta$ s = .41, .24, .33 for tracking, internalization, and symbolization, respectively, all  $ps < .001$ ;  $\beta$ s for religious affiliation (coded religiously affiliated of any denomination = 1; atheist/agnostic = 0) ranged from  $-.07$  to  $.03$ ,  $ps = .25$  to  $.62$ . These analyses suggest that M2IRGB predicts moral identity and moral tracking, independent of extrinsic religiosity and religious affiliation.

**Comparing nonbelievers versus religiously affiliated, low in intrinsic religiosity.** An issue with using continuous religiosity variables is that, for all but the God belief item, low ratings by atheists/agnostics may reflect something different (e.g., “inapplicable”) compared with low ratings for the religiously affiliated. To further justify using continuous ratings of intrinsic religiosity in this program of studies, we examined whether there were differences in moral identity variables between nonbelievers (i.e., atheists/agnostics) and people with low intrinsic religiosity who endorse a (typically Christian) religious affiliation. In the current sample, 99 individuals identified themselves as atheists and 116 identified as agnostics. Atheists and agnostics did not differ from each other on intrinsic religiosity or on any of the moral identity measures,  $ts(213)$  ranged from 0.42 to 1.85, all  $ps > .07$ , and so they were combined into a nonbeliever group ( $n = 215$ ). Not surprisingly, on average, these individuals rated themselves lower on intrinsic religiosity  $M(SD) = 2.74$  (0.60) compared with those selecting any religious affiliation ( $n = 329$ ),  $M(SD) = 4.57$  (1.38),  $t(542) = 18.29$ ,  $p < .001$ ,  $d = 1.57$ .

Were nonbelievers significantly different in moral identity from those who endorsed a religious affiliation but reported low intrinsic religiosity? We divided the religiously affiliated (of all groups/denominations; excluding participants who selected “other”) into two groups, using a median split for scores on the full intrinsic religiosity subscale (using the median for the religiously affiliated group, 4.63). We then compared the nonbelievers (atheists/agnostics;  $n = 215$ ) with the religiously affiliated with low intrinsic

religiosity ( $n = 173$ ). Nonbelievers and the religiously affiliated with low intrinsic religiosity did not significantly differ on the internalization of moral identity or moral tracking, for moral identity,  $t(386) = 0.61$ ,  $p = .55$ ,  $d = 0.06$ ;  $M(SD) = 5.83$  (1.10) for nonbelievers,  $M(SD) = 5.89$  (0.96) for religiously affiliated; for moral tracking,  $t(386) = 1.30$ ,  $p = .19$ ,  $d = 0.13$ ;  $M(SD) = 4.22$  (1.16) for nonbelievers,  $M(SD) = 4.36$  (0.92) for religiously affiliated. Jeffrey-Zellner-Siow (JZS) Prior Bayes Factors for the moral identity measures were 5.41 for moral tracking and 10.33 for the internalization of moral identity, suggesting that the null is between five and nearly 10 times more likely than the alternative of a difference (Rouder, Speckman, Sun, Morey, & Iverson, 2009). These analyses suggest that individuals who endorse low levels of intrinsic religiosity but also endorse a religious affiliation are not different, in terms of moral identity measures, from those who are similarly low and do not endorse an affiliation. Nevertheless, in an abundance of caution, in Studies 3–5 we also include analyses that exclude nonbelievers (atheists/agnostics). See [online supplemental materials](#) for additional analyses comparing these groups.

## Preliminary Study 2

### Method

We collected data from two additional samples ( $N = 407$  MTurk workers;  $N = 258$  undergraduate students at the University of Missouri-Columbia; refer to the [online supplemental materials](#) for full demographics and materials) to examine how M2IR, GB, and M2IRGB related to well-established measures of religiosity. We chose scales based on a literature search aimed at identifying the most commonly used, broad, and contemporary measures of religiosity, specifically religious commitment and intrinsic religiosity. In addition to the GB item (adapted from Gervais & Norenzayan, 2012), we included the following scales, completed in the order they appear: Intrinsic/Extrinsic Religiosity Scale (Gorsuch & McPherson, 1989), Religious Commitment Inventory-10 (Worthington et al., 2003), Duke University Religion Index (Koenig & Büssing, 2010), Santa Clara Religious Faith Questionnaire (Plante & Boccaccini, 1997), and the Centrality of Religiosity Scale (Huber & Huber, 2012). The Duke University Religion Index includes



three subscales; we utilized an aggregate of all items and then the three-item intrinsic subscale. The Centrality of Religiosity Scale includes five subscales, but as these were not of interest we calculated a full aggregate score. We aggregated across all extrinsic religiosity items.

Because these religiosity scales include identical items and retaining these in all of the scales would artificially inflate correlations, we removed items that were redundant with earlier scales that had been completed (ranging from 1–5 items per scale; see [online supplemental materials](#) for dropped items). The Duke Religiosity Index included items redundant with other scales but because it contains only five items the full scale was retained in analyses. In analyses, we included three versions of the intrinsic religiosity subscale: the full eight-item subscale, M2IR (“I try hard to live all my life according to my religious beliefs”; “My whole approach to life is based on my religion”), and a six-item scale that excludes the two items included in the M2IR composite. We also included two versions of the Centrality of Religiosity Scale, both with and without two God belief items (as our composite included a different but similar God belief item). Descriptive statistics and reliabilities for these measures are shown in [Table 3](#).

In the student sample, we also included two measures of moral identity to provide further assurance that extrinsic religiosity did not share an association with it independent of M2IRGB. We included the internalization of moral identity scale (Aquino & Reed, 2002),  $\alpha = .78$ ,  $M(SD) = 6.49(0.63)$ , as well as a face-valid ad hoc four-item moral identity scale (see the [Appendix](#) for items),  $\alpha = .87$ ;  $M(SD) = 5.38(1.00)$ .

## Results

As in Preliminary Study 1, in both samples, the two intrinsic religiosity items used in the M2IR and M2IRGB composites had

the highest item-total correlations with the full intrinsic religiosity scale (corrected item-total  $r_s > .74$ ). As shown in [Table 3](#), in both samples, M2IR and M2IRGB were very strongly correlated with the Santa Clara Religious Faith Scale, the Duke University Religion Index, the Religious Commitment Inventory, and the Centrality of Religiosity Scale ( $r_s > .82$ ,  $p_s < .001$ ). These associations lend support to the use of these items as indicators of intrinsic religiosity. In addition, these results are consistent with past theory and research suggesting that intrinsic religiosity is strongly related to religious commitment and the personal importance of religion (e.g., Donahue, 1985; Kirkpatrick & Hood, 1990). Notably, GB was also strongly associated with all religiosity measures, providing support for its inclusion with the two intrinsic religiosity items in the composite measure, M2IRGB.

When moral identity measures were regressed on extrinsic religiosity and M2IRGB, simultaneously, extrinsic religiosity was not a significant predictor of moral identity,  $\beta = -.02$ ,  $p = .77$ , or the internalization of moral identity,  $\beta = -.12$ ,  $p = .13$ . M2IRGB was a significant predictor in both models:  $\beta = .38$ ,  $p < .001$ , predicting moral identity;  $\beta = .24$ ,  $p < .001$ , predicting the internalization of moral identity.

## Brief Discussion of Preliminary Studies

Results from these preliminary data sets support the utility of M2IR, GB, and M2IRGB as brief variables to be used in the subsequent studies. These variables were strongly associated with numerous established measures of religiosity. Notably, preliminary results also support the proposed association between M2IRGB and moral identity. Preliminary findings are consistent with past research showing that intrinsic religiosity and the strength of religious beliefs are better predictors of empathic values and altruism compared with religious affiliation and church

Table 3

*Descriptive Statistics and Correlations Between Religiosity Measures, Preliminary Study 2 Samples*

Measure	M2IRGB	GB	M2IR	IREL	IRMin2	SCR	DUKE	DUKE-IR	RCI	CRS	ShortCRS	EREL
M2IRGB	—	.80*	.95*	.89*	.79*	.89*	.87*	.88*	.81*	.84*	.83*	.62*
God belief	.84*	—	.58*	.68*	.63*	.73*	.71*	.72*	.57*	.74*	.70*	.52*
M2IR	.96*	.65*	—	.88*	.76*	.83*	.83*	.84*	.81*	.77*	.78*	.59*
Intrinsic religiosity	.89*	.63*	.89*	—	.98*	.88*	.88*	.88*	.84*	.85*	.85*	.54*
Shortened intrinsic religiosity	.78*	.61*	.76*	.97*	—	.83*	.84*	.83*	.79*	.82*	.82*	.48*
Santa Clara Religious Faith	.91*	.77*	.87*	.86*	.78*	—	.92*	.91*	.82*	.92*	.91*	.65*
Duke Religion Index	.89*	.75*	.86*	.87*	.80*	.92*	—	—	.86*	.90*	.90*	.59*
Duke-Intrinsic Religiosity	.90*	.78*	.86*	.86*	.79*	.92*	.97*	—	.81*	.90*	.89*	.61*
Religious Commitment Inventory	.82*	.60*	.84*	.84*	.77*	.86*	.84*	.81*	—	—	.86*	.52*
Centrality of Religion Scale	.90*	.78*	.85*	.86*	.80*	.93*	.91*	.91*	.86*	—	.99*	.59*
Shortened Centrality of Religion Scale	.88*	.72*	.85*	.87*	.80*	.92*	.90*	.88*	.88*	.99*	—	.59*
Extrinsic religiosity	.68*	.54*	.66*	.54*	.43*	.67*	.61*	.61*	.64*	.66*	.66*	—
$\alpha$ Mturk sample	.85	—	.89	.81	.68	.97	.93	.94	.96	.96	.94	.85
$M$ Mturk sample	.00	3.61	3.59	4.03	4.18	2.35	2.73	2.84	2.25	2.87	2.71	2.97
$SD$ Mturk sample	.89	1.47	2.13	1.46	1.35	1.07	1.45	1.46	1.25	1.28	1.29	1.41
$\alpha$ Student sample	.82	—	.87	.85	.76	.97	.90	.90	.94	.95	.93	.81
$M$ Student sample	-.00	3.91	3.23	3.75	3.92	2.34	2.68	2.80	2.06	2.98	2.84	3.32
$SD$ Student sample	.86	1.09	1.77	1.37	1.33	.94	1.22	1.25	1.01	1.05	1.06	1.20

*Note.*  $N = 257$  student sample;  $N = 407$  Mturk sample. Mturk sample results are below the diagonal; student sample results appear above the diagonal. Key results for the shortened religiosity variables are shown in bold. Rating scales were as follows: Intrinsic/extrinsic religiosity, 1–7; Religious commitment & Centrality of Religion Scale, 1–5; Duke 1–6; Santa Clara Religious Faith, 1–4. The M2IRGB composite is the mean of the standardized God belief item (adapted from Gervais & Norenzayan, 2012) and the items: “My whole approach to life is based on my religion” and “I try hard to live all my life according to my religious beliefs.” (“M2IR”, items from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989).

\*  $p < .001$ .



attendance (e.g., Hardy et al., 2012; Markstrom, Huey, Stiles, & Krause, 2010; Smith, 2009). In addition, the results of Preliminary Study 1 indicated that those with low intrinsic religiosity place a similar importance on moral identity, regardless of whether they are atheist/agnostic or identified with a religious group. Both of these groups with low intrinsic religiosity placed a lower value on moral identity and moral tracking than people with high intrinsic religiosity.

Because the items tapping religious motivations toward life (i.e., intrinsic religiosity), God belief, and their composite may differ in meaningful ways, in the interest of transparency, in the main studies we report results for three separate indicators of religion: M2IR, GB, and M2IRGB (as well as additional items in Study 5).

### Study 1

Previous research has proposed that recalling a personal immoral act represents a threat to moral self-image (MSI; e.g., Zhong et al., 2009), but this assumption has not been tested directly. In Study 1, participants were assigned randomly to write about a time they behaved immorally (or to a control topic) and then completed measures of moral strivings and moral failings. The primary aim of Study 1 was to ascertain how this manipulation alters people's views of their moral failings and moral strivings. We predicted that writing about a recent immoral act would increase reports of moral failings. We did not expect the manipulation to affect moral strivings as most people have a strong motivation to view themselves as moral (Aquino & Reed, 2002).

A second goal of Study 1 was to confirm that this manipulation alters MSI similarly across levels of M2IRGB. Galen (2012, p. 898) proposed that religion may confer relatively impervious "moral credentials," rendering religious people immune to this manipulation. It is also possible that people with high M2IRGB could experience more unstable MSI and would instead demonstrate a heightened sensitivity to the manipulation. We predicted that the manipulation would influence MSI and that these effects would emerge regardless of M2IRGB. Such results would be consistent with the notion that MSI is not more (or less) malleable among people who endorse strong religious motivations toward life and God belief.

### Method

**Participants.** One hundred sixty-nine MTurk workers participated in this study.<sup>5</sup> Respondents with duplicate IP addresses were dropped for all but the first completion of the study (final  $N = 169$ ; 75 men, 94 women; paid \$1). Ages ranged from 18–71,  $M(SD) = 35.67(12.27)$ . Reported ethnicities included 77.5% Caucasian/White, 8.3% Black/African American, 5.9% Hispanic/Latino, 6.5% Asian/Asian American, and 1.8% other. Table 1 reports the religious affiliations represented. Atheists/agnostics comprised 46% of the sample. Among the religiously affiliated, 91% were from Christian denominations (i.e., Christian, Catholic, Protestant, Mormon/LDS).

**Materials and procedure.** Participants were assigned randomly to write for two minutes about a moral transgression<sup>6</sup> (MSI threat condition,  $n = 86$ ) or a control topic (the path they took the last time they went to the grocery store,  $n = 83$ ).<sup>7</sup> The MSI threat instructions (similar to those employed by Conway & Peetz, 2012;

Jordan, Mullen, & Murnighan, 2011; Sachdeva et al., 2009) stated: "Please write about a time when you recently acted immorally. If you cannot think of any immoral actions in your recent past, try to think of minor dishonest acts, such as hurting someone's feelings or lying."

Following the writing tasks, participants rated agreement with a list of face valid statements pertaining to moral self-image (1 = *strongly disagree* to 7 = *strongly agree*). The items measured moral strivings (10 items, e.g., "I am a very moral person," "I always strive to do the right thing"; See the Appendix);  $\alpha = .90$ ;  $M(SD) = 4.94(0.97)$ ; and moral failings (6 items; e.g., "I don't always live up to my moral standards"; See the Appendix),  $\alpha = .78$ ,  $M(SD) = 3.79(1.10)$ . These two scales were negatively correlated,  $r = -.33$ ,  $p < .001$ . Moral strivings and moral failings scale scores were computed with the mean of corresponding items. (We also examined moral self-image using measures that were less constrained than those above. Results for these conform to the

<sup>5</sup> We also included attention check items (ACI) in this study, as well as Studies 2 through 4, which requested that a participant select a particular response (e.g., "select strongly disagree here"). All information regarding these is reported here. In Study 1, there were two ACI; no participants (of  $N = 169$ ) failed. In Study 2, there were two ACI; one participant (of  $N = 207$ ) failed one. In Study 3, there were two ACI; three participants (of  $N = 200$ ) failed one. In Study 4, there were three ACI; two participants (of  $N = 197$ ) failed one. In all studies, no participants failed more than one attention check. Therefore, it was clear people were generally paying attention and reading the items. None of the predicted interactions changed when excluding participants who failed the ACI.

<sup>6</sup> Responses to the writing prompts in Studies 1 through 5 were analyzed to ensure writing comported with instructions. All participants who failed to comport with writing instructions were in the MSI threat condition (i.e., none in the control), and they generally claimed that they cannot recall a time they have acted immorally (or claimed they do not ever act immorally). These participants were retained in the analyses as it was likely that these people were still primed with morally relevant thoughts because they were forced on the writing page for two minutes. All of the primary interactions of interest remained significant when excluding participants who did not follow writing task instructions. These results are reported here. One participant did not follow writing task instructions in Study 1. Two participants did not follow writing task instructions in Study 2. When excluding these participants, the predicted M2IRGB  $\times$  Condition interaction predicting negative mood remained significant ( $\Delta R^2 = .03$ ,  $\beta = .24$ ,  $p = .012$ ) and was qualified by a main effect of condition ( $\beta = .15$ ,  $p = .028$ ). Three participants did not follow writing task instructions in Study 3. When excluding these participants, the predicted M2IRGB  $\times$  Condition interaction remained significant ( $\Delta R^2 = .03$ ,  $\beta = .22$ ,  $p = .022$ ). Six participants did not follow writing task instructions in Study 4. When excluding these participants, the predicted M2IRGB  $\times$  Condition interaction remained significant ( $\Delta R^2 = .03$ ,  $\beta = -.25$ ,  $p = .01$ ). Three participants did not follow writing task instructions in Study 5. When excluding these participants, the predicted M5IRGB  $\times$  Condition interaction remained significant ( $\Delta R^2 = .02$ ,  $\beta = .21$ ,  $p = .028$ ).

<sup>7</sup> We initially thought that people with high M2IRGB may also be especially susceptible to moral self-image boosts so we included this manipulation in Studies 1 through 4 (cell  $n$ s = 83, 101, 101, 99 for Studies 1-4, respectively). In all cases (Studies 1-4), people were asked to write about a time they recently acted morally. However, in no instance did religiosity interact with the moral boost condition to predict outcomes so this condition was excluded from analyses to simplify the presentation of results. In some studies the moral boost had a main effect on outcomes. In Study 1, the moral boost influenced moral self-image. In Study 4, the moral boost resulted in decreased cheating, ANOVA results,  $F(2, 293) = 3.70$ ,  $p = .026$ ;  $M(SD)$  = control = 2.30(3.17), immoral = 2.04(3.08), moral = 1.21(2.50). People cheated less after recalling a moral act. Otherwise, there were no main effects of the moral boost condition nor interactions with religiosity.

pattern reported below. These results and all items appear in the [online supplemental materials](#)).

Finally, participants reported their religious affiliation (see [Table 1](#)), completed the Intrinsic/Extrinsic Religiosity scale ([Gorsuch & McPherson, 1989](#)), and rated GB,  $M(SD) = 3.31(1.52)$ . For M2IR,  $\alpha = .88$ ;  $M(SD) = 3.07(2.10)$ . The M2IRGB composite ( $\alpha = .87$ ) was strongly correlated with the full intrinsic religiosity subscale,  $r = .94, p < .001$ .

## Results and Discussion

As shown in [Table 4](#), participants who wrote about a personal immoral act reported more moral failings than those in the control condition, providing support for the assumption that this manipulation enhances people's acknowledgment of moral shortcomings and immoral propensities (vs. the control condition). However, this manipulation did not change people's valuation of moral aims: Conditions did not differ on moral strivings. As shown in [Table 4](#), importantly, controlling for M2IRGB did not alter these results. (Controlling for M2IR and GB also did not alter the effect of condition on moral strivings or failings).

We next assessed whether religiosity variables interacted with condition to predict either moral failings or strivings. [Table 5](#) shows hierarchical regression models predicting moral strivings and failings from M2IRGB, condition, and the M2IRGB  $\times$  Condition interaction. As can be seen, M2IRGB did not interact with condition to predict moral strivings or failings. Similarly, neither GB nor M2IR interacted with condition to predict moral failings or strivings, all interaction  $\beta$ s  $< \pm .16, ps > .14$ . The Jeffrey-Zellner-Siow Bayes Prior factors ([Rouder et al., 2009](#)) suggest the null is between 32 to 49 times more likely than the alternative (i.e., that M2IR, GB, or M2IRGB interact with condition) for moral strivings and between 71 to 76 times more likely for moral failings. Thus, the MSI threat manipulation affected people similarly regardless of their endorsement of religiosity or God belief items.

## Brief Discussion of Study 1

Study 1 showed that, as expected, the MSI threat manipulation led people to report higher moral shortcomings. Moreover, the manipulation affected MSI regardless of levels of M2IRGB: People who strongly endorsed items pertaining to religious motivations toward life and God belief were not more (or less) prone to these effects. Results were asymmetrical, in that the MSI threat led to higher reports of moral failings but did not

Table 5

*Tests for Moderation of Condition by M2IRGB, Study 1*

Predictors	Criterion	
	Moral strivings	Moral failings
Main effects, $\Delta R^2$	.12***	.09***
M2IRGB	.23*	-.23*
Condition	-.11	.21**
Interaction, $\Delta R^2$	.012	.000
M2IRGB $\times$ Condition	.15	-.00

*Note.* Coefficients are standardized regression weights ( $\beta$ s). Condition was dummy coded, 0 = control, 1 = MSI threat condition. For interaction steps,  $ps$  ranged from .13 to .89. The M2IRGB composite is the mean of the standardized God belief item (adapted from [Gervais & Norenzayan, 2012](#)) and the items: "My whole approach to life is based on my religion" and "I try hard to live all my life according to my religious beliefs" (from Intrinsic Religiosity subscale, [Gorsuch & McPherson, 1989](#)). This table reports statistics from the final steps of hierarchical regression models (with the exception of  $\Delta R^2$  values, which are reported for each step).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p \leq .001$ .

alter moral strivings, potentially demonstrating that moral strivings and moral identity are not as mutable in response to reminders of moral transgressions. Although all people, regardless of their levels of M2IRGB, may begin to acknowledge more moral fallibility following a reminder of a past moral transgression, we do not predict that all people will respond to decrements in MSI in a similar fashion. We have proposed that people who strongly endorse religious motivations toward life may find these changes in moral self-image more distressing than people who place less (or no) emphasis on religion. Study 2 tested this proposal.

## Study 2

Affect plays an important role in self-regulatory processes ([Carver & Scheier, 2008](#)) and as such, we might expect that emotional responses to reminders of moral failings would vary as a function of the value placed on the goal of being a moral person. Based on the idea that moral identity is of particular importance to people who endorse the items "I try hard to live all my life according to my religious beliefs" and "My whole approach to life is based on my religion" and people who strongly believe in God, we hypothesized that although M2IR and GB would *not* be related to negative emotions in the control condition, after the MSI threat,

Table 4

*Effects of Condition on Moral Self-Image Measures, Study 1*

Self-image measure	Condition				Condition $F(1, 166)$ controlling for M2IRGB (partial $\eta^2$ )
	Control ( $n = 83$ )	Immoral ( $n = 86$ )	$t(167)$	$d$	
Moral strivings	5.04 (0.94)	4.85 (0.98)	1.28	.20	2.23 (0.01)
$r$ with M2IRGB	.24*	.43**			
Moral failings	3.57 (0.98)	4.00 (1.17)	2.61*	.40	7.68** (0.04)
$r$ with M2IRGB	-.27*	-.22*			

*Note.* The M2IRGB composite is the mean of the standardized God belief item (adapted from [Gervais & Norenzayan, 2012](#)) and the items: "My whole approach to life is based on my religion" and "I try hard to live all my life according to my religious beliefs" (from Intrinsic Religiosity subscale, [Gorsuch & McPherson, 1989](#)).

\*  $p \leq .05$ . \*\*  $p < .01$ .

these variables would predict negative emotions, particularly moral emotions such as guilt and shame. In addition, because M2IR and GB are associated with moral self-image and valuing morality, thinking about information that contradicts this elevated moral self-image may potentially elicit cognitive dissonance so we included affect terms targeting these emotions.

## Method

**Participants.** Two hundred eight MTurk workers participated in this study. Respondents with duplicate IP addresses were dropped for all but the first completion of the study (final  $N = 207$ ; 118 men, 89 women; paid \$1). Ages ranged from 18–62,  $M(SD) = 31.92(10.19)$ . Reported ethnicities included 80.7% Caucasian/White, 6.3% Black/African American, 6.3% Hispanic/Latino, 4.3% Asian/Asian American, and 2.4% other. Table 1 reports the religious affiliations represented. Atheists/agnostics comprised 46.4% of the sample. Among the religiously affiliated, 93% were from Christian denominations.

**Materials and procedure.** All participants completed demographic information and religiosity variables, including religious affiliation, the 2 intrinsic religiosity items, M2IR,  $M(SD) = 2.75(1.99)$ , and the God belief item,  $M(SD) = 3.02(1.52)$ , from the preliminary study. For standardized composite, M2IRGB,  $\alpha = .89$ . Following extended demographic questions and a filler personality questionnaire to distract from the religiosity items, participants were assigned randomly to the same writing tasks used in Study 1 (MSI threat,  $n = 102$ ; control topic,  $n = 105$ ). In total, the religiosity items were separated from the manipulation by 23 items. Afterward, participants completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) and the guilt subscale of the extended PANAS (Watson & Clark, 1994). Additional items were added to measure self-conscious moral emotions (e.g., embarrassed, regretful) and dissonance-related emotions (e.g., uneasy, uncomfortable, bothered; adapted from Elliot & Devine, 1994) to fully capture the range of negative emotions these MSI threats would evoke. The following items were also added to ensure that less activated moods were represented: enjoyment/fun, happy, sad, angry, worried, and pleased.

A composite negative affect variable was formed with the negative affect PANAS subscale modified with sad, angry, and worried,  $M(SD) = 1.61(.86)$ ,  $\alpha = .93$ . A composite positive affect variable was formed using the standard PANAS positive affect subscale modified with the items: happy, enjoyment/fun, pleased,  $M(SD) = 3.79(1.25)$ ,  $\alpha = .93$ . Composites were formed for self-conscious moral emotions (embarrassed, ashamed, regretful, and guilty),  $M(SD) = 1.67(1.17)$ ,  $\alpha = .91$ ; and for dissonance-related emotions (uncomfortable, uneasy, and bothered),  $M(SD) = 1.76(1.08)$ ,  $\alpha = .83$ .

## Results and Discussion

**Preliminary analyses.** As expected, conditions differed significantly on self-conscious moral emotions,  $t(205) = -2.92$ ,  $p = .004$ ,  $d = -0.41$ ;  $M(SDs) = 1.44(0.85)$ ,  $1.91(1.39)$  for control and MSI threat conditions, respectively. For dissonance-related feelings, the difference was in the same direction but not significant,  $t(205) = -1.85$ ,  $p = .066$ ,  $d = -0.26$ ,  $M(SDs) = 1.62(0.94)$ ,  $1.90(1.19)$ , for control and MSI threat conditions, respectively.

There were no differences on positive affect,  $t(205) = 0.60$ ,  $p = .55$ ,  $d = 0.08$ ;  $M(SDs) = 3.84(1.17)$ ,  $3.73(1.33)$ , control and immoral, respectively, or negative affect,  $t(205) = -0.98$ ,  $p = .33$ ,  $d = -0.14$ ;  $M(SDs) = 1.55(.85)$ ,  $1.66(.87)$ , control and immoral, respectively.

The affect variables were highly correlated. General negative affect was strongly correlated with self-conscious moral emotions,  $r = .83$ ,  $p < .001$ , and dissonance,  $r = .82$ ,  $p < .001$ . Dissonance and self-conscious moral emotions were also strongly correlated,  $r = .76$ ,  $p < .001$ . These relationships did not differ across conditions, all  $rs \geq .67$ , all  $ps < .001$ . To simplify analyses, a composite “negative affect” variable was formed ( $\alpha = .91$ ) using the mean of general negative affect, self-conscious moral emotions, and dissonance items.

**Primary analyses.** We predicted that the MSI threat would lead to heightened emotional responses among participants who strongly endorsed items pertaining to religious motivations toward life and God belief. We first probed whether the manipulation interacted with endorsement of items capturing a religious motivation toward life (M2IR). As shown in Table 6, when the negative affect composite was regressed hierarchically on standardized M2IR, dummy coded conditions (MSI threat = 1, control = 0), and their interaction, a main effect of condition was qualified by the predicted M2IR  $\times$  Condition interaction. Patterns of regression results and within cell correlations for both GB and M2IRGB were similar (see Table 6). As shown in Figure 1, after recalling an immoral act, M2IRGB significantly predicted negative affect, but in the control condition, M2IRGB was unrelated to negative affect (see Table 6 for within cell  $\beta$ s).<sup>8</sup> As shown in Figure 1, among those with low M2IRGB, negative mood did not differ by condition. The patterns of results for models assessing self-conscious moral emotions and dissonance emotions were consistent with those for the composite negative affect variable (see online supplemental materials).

Analyses also addressed whether M2IRGB interacted with condition to predict positive affect. It did not: For the main effect of M2IRGB,  $\beta = .18$ ,  $p = .07$ ; for main effect of condition,  $\beta = -.04$ ,  $p = .59$ ; for the interaction,  $\beta = -.04$ ,  $p = .68$ . Thus, the MSI threat manipulation only heightened negative emotions, leaving positive affect unchanged.

## Brief Discussion of Study 2

As predicted, the MSI threat enhanced the association between M2IRGB and negative affect. Although the results of Study 1 demonstrated that people experience lower MSI following immoral recall regardless of their levels of M2IRGB, the present findings indicate that M2IRGB predicts finding these drops in MSI more emotionally distressing. These results support the idea that strongly endorsing religion as a guiding motivator in life may amp up moral self-regulation. These findings are consistent with past research showing that religious people experienced stronger self-

<sup>8</sup> We also examined potential deviations from linearity in Studies 2–5 using locally weighted regression (LOESS) models. With the exception of a cubic main effect of M5IRGB in Study 5 (driven by the control condition), no substantial deviations from linearity were observed so we model the data using linear regression in the manuscript. Refer to the online supplemental materials, Figures 1–4 for the LOESS models.



Table 6  
*Study 2: Regressions Estimates Predicting Negative Affect  
 Composite From Religion Variables*

Variable	M2IR	GB	M2IRGB
Main effects, $\Delta R^2$	.03 <sup>†</sup>	.04*	.03*
Religiosity measure	-.10	-.04	-.09
Condition	.15*	.15*	.15*
Interaction, $\Delta R^2$	.03*	.03*	.03*
Religiosity measure $\times$ Condition	.22*	.24*	.25*
Condition $\beta$ s for religiosity measures			
Control	-.05	-.12	-.10
Immoral recall	.19 <sup>†</sup>	.27**	.24*

*Note.* M2IR = Mean of items: “My whole approach to life is based on my religion” and “I try hard to live all my life according to my religious beliefs” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989). GB = Belief in God, ranging from 1 *God does not exist* to 5 *God certainly does exist* (adapted from Gervais & Norenzayan, 2012). M2IRGB = Mean of the standardized GB and 2IR items. For M2IR  $\times$  Condition interaction,  $p = .023$ ; GB  $\times$  Condition interaction,  $p = .014$ ; M2IRGB  $\times$  Condition interaction,  $p = .012$ . This table reports statistics from the final steps of hierarchical regression models (with the exception of  $\Delta R^2$  values, which are reported for each step). The full results for all steps of the hierarchical regression models are reported in the [online supplemental materials](#).

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

conscious moral emotions in response to their own moral transgressions than nonreligious people (Hofmann, Wisneski, Brandt, & Skitka, 2014).

Of course, feeling bad after recalling an immoral act is different from actually behaving morally to compensate for a past transgression. Religions have a variety of ways that individuals might atone for past immoral acts (e.g., praying, seeking forgiveness via confession) and these do not necessarily involve actual behavior to redress a wrongdoing. We have suggested that people who strongly endorse religious motivations toward life and believe in God will engage in compensatory behaviors in response to MSI threats because of the high stakes of the moral domain. Studies 3 through 5 tested this prediction.

### Study 3

This study tested whether people who strongly endorse religious motivations toward life (i.e., agreeing with the items “I try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion”) and strongly believe in God would engage in more prosocial behavior following a reminder of a past transgression. We predicted that condition (i.e., control vs. MSI threat) would moderate the association between these items and prosocial behavior. We did not expect M2IR and GB to be related to behavior in the control condition but we predicted that they would predict prosocial behavior in response to the MSI threat. In this study, we also measured agreeableness to see whether it served as a (secular) “third variable” that might explain any association between religiosity items and prosocial behavior following the MSI threat.

### Method

**Participants.** Participants were MTurk workers ( $N = 202$ ; paid \$1) who completed the study online. Respondents with

duplicate IP addresses were dropped for all but the first completion of the study (final  $N = 200$ ; 97 women, 103 men). Ages ranged from 18–71,  $M(SD) = 33.69(11.99)$ . Reported ethnicities included 81.5% Caucasian/White, 6.5% Black/African American, 4% Hispanic/Latino, 5.5% Asian/Asian American, and 2.5% other. Table 1 reports the religious affiliations represented. Atheists/agnostics comprised 48% of the sample. Among the religiously affiliated, 87% were from Christian denominations.

**Materials and procedure.** Participants completed standard demographic information, M2IR,  $M(SD) = 3.00(2.11)$ , GB,  $M(SD) = 3.14(1.55)$  (for M2IRGB,  $\alpha = .91$ ), and three items assessing agreeableness,  $M(SD) = 5.54(1.21)$ ,  $\alpha = .79$ . Two of these were from the Ten Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003): “I see myself as sympathetic, warm”; and “I see myself as critical, quarrelsome” (recoded). A third item was, “I see myself as caring, compassionate.” These religiosity and agreeableness questionnaires were kept short and were embedded within several mood and personality questionnaires (e.g., the Ten Item Personality Inventory; the PANAS) to distract from the focus on religion. In total, the religiosity items were separated from the manipulation by 62 items. After completing these questionnaires, participants were assigned randomly to the same writing conditions from Studies 1 and 2. For the MSI threat condition,  $n = 98$ ; for the control condition,  $n = 102$ .

**Prosocial Task.** Immediately following the writing task, participants were informed that the study was over. On the same page, they were told that we were currently trying to raise social awareness about the importance of disaster relief efforts by allowing people to complete additional tasks in exchange for money that we would donate to the American Red Cross charity (see Sachdeva et al., 2009; Studies 1 and 2 for similar procedures). They were told that we would donate \$0.10 for every additional activity they completed, up to a total of \$0.50 per participant. They were assured that they would get paid for the study regardless of whether they completed any of these additional activities.

If participants agreed to begin the charity task, they were presented with five essay prompts requiring them to write about shopping for various grocery items (e.g., breakfast items, fruit). Participants were presented with shopping-relevant questions (e.g., “Where do you typically buy this product?”; “What qualities are important to you when shopping for this item?”) and were told to write at least four sentences that addressed these questions about the item listed. After writing about each item, participants were given the option to continue with the charity task or to opt out. The total number of tasks (up to five possible) they completed served as the dependent variable. At the end of the study, participants were probed for suspicion. Specifically, they were asked what they thought this study was investigating and whether they had any suspicions about what we were investigating. Twenty participants (10%) expressed doubts about whether the ostensible donation would actually be paid to the Red Cross and/or mentioned they thought this was part of the study. Following the suspicion probe, participants were debriefed and told we would be donating \$50 to the Red Cross.

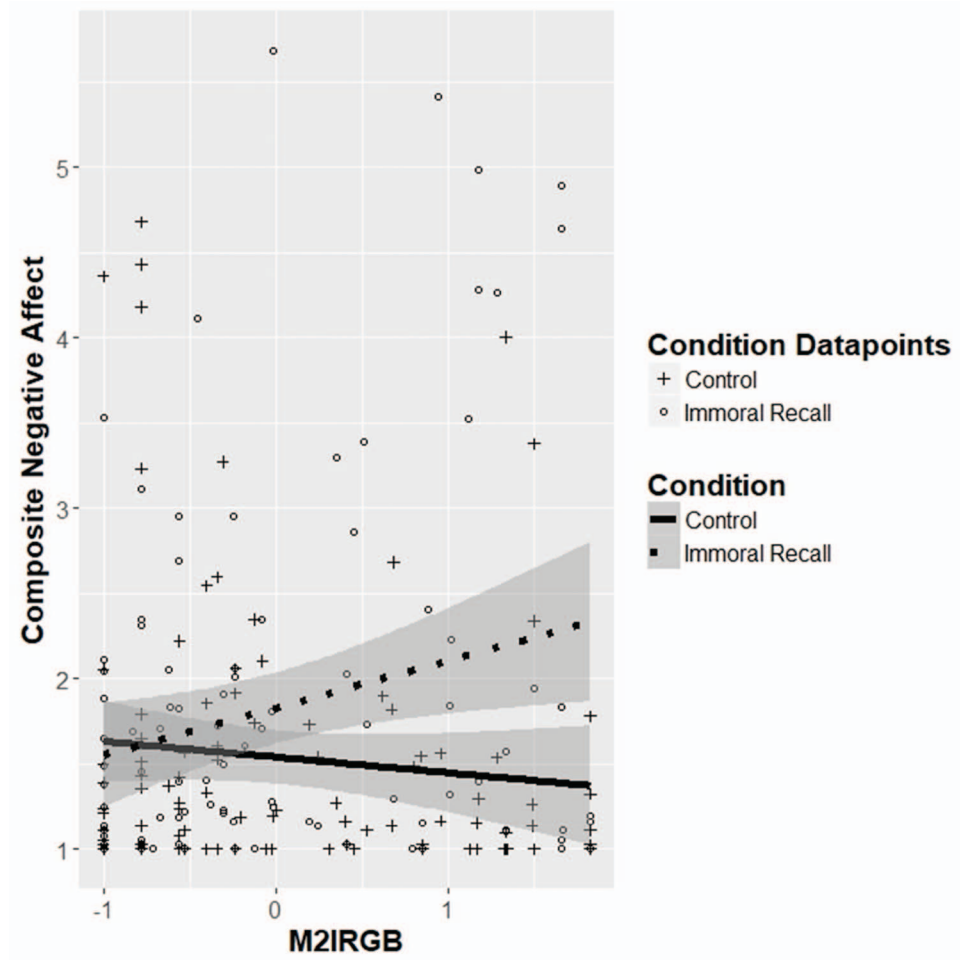


Figure 1. Religion (M2IRGB)  $\times$  Condition interaction predicting negative affect composite (composite of self-conscious moral emotions, dissonance, and general negative affect), Study 2. Regression lines (generated using the ggplot2 package in R software) predicting the negative affect composite (composite of self-conscious moral emotions, dissonance, and general negative affect) from M2IRGB within each condition (control,  $\beta = -.10$ ,  $p = .30$ ; or recollection of an immoral act,  $\beta = .24$ ,  $p = .017$ ), Study 2. The shaded bands around regression lines represent 95% confidence intervals. M2IRGB refers to the mean of the following three standardized items: “My whole approach to life is based on my religion,” “I try hard to live all my life according to my religious beliefs” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989), and “To what extent do you believe a Supreme being, God, exists?” (responses ranging from “God does not exist” to “God certainly does exist”; adapted from Gervais & Norenzayan, 2012).

## Results and Discussion

**Preliminary analyses.** Overall, 33.5% of participants consented to doing tasks for a charity donation; of those who did volunteer, the average number of charity tasks completed was 2.50 ( $SD = 1.77$ ). Conditions did not differ on the number of charity tasks completed,  $t(198) = -0.74$ ,  $p = .46$ ,  $d = -0.11$ ;  $M(SD)$  = control = 0.75(1.46), MSI threat = 0.92(1.65). The percentage of people who opted to do the charity tasks did not differ by condition,  $\chi^2(1, N = 200) = 3.35$ ,  $p = .65$ . Women completed significantly more prosocial tasks than men,<sup>9</sup>  $M(SD)$  = 1.24(1.82) versus 0.46(1.15), respectively,  $t(198) = 3.65$ ,  $p < .001$ ,  $d = 0.52$ .

**Primary analyses.** Analyses next examined whether religiosity variables moderated condition effects, as in Study 2. The

number of prosocial tasks completed was regressed hierarchically on each continuous predictor (standardized M2IR, GB, & M2IRGB), dummy coded condition, and their interactions. Results are shown in Table 7. As predicted, M2IR, GB, and M2IRGB all significantly interacted with condition to predict prosocial task completion. As predicted and shown in Table 7, M2IR, GB, and M2IRGB predicted completion of prosocial tasks after writing about a past immoral behavior, but they were unrelated to prosocial tasks in the control condition. Regression lines predicting prosocial task completion from M2IRGB within each condition are

<sup>9</sup> Refer to the [online supplemental materials](#) for a full description of analyses involving gender.

Table 7  
*Study 3: Regressions Estimates Predicting Prosocial Actions  
 From Religion Variables*

Predictor	M2IR	GB	M2IRGB
Main effects, $\Delta R^2$	.04*	.04*	.05**
Religiosity measure	.07	.04	.07
Condition	.06	.08	.07
Interaction, $\Delta R^2$	.02*	.03*	.03*
Religiosity measure $\times$ Condition	.19*	.23*	.22*
Condition $\beta$ s for religiosity measures			
Control	.08	.05	.07
Immortal Recall	.32***	.35***	.35***

*Note.* M2IR = Mean of items: "My whole approach to life is based on my religion" and "I try hard to live all my life according to my religious beliefs" (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989). GB = Belief in God, ranging from 1 *God does not exist* to 5 *God certainly does exist* (adapted from Gervais & Norenzayan, 2012). M2IRGB = Mean of the standardized GB and 2IR items. For M2IR  $\times$  Condition interaction,  $p = .047$ ; GB  $\times$  Condition interaction,  $p = .015$ ; M2IRGB  $\times$  Condition interaction,  $p = .022$ . This table reports statistics from the final steps of hierarchical regression models (with the exception of  $\Delta R^2$  values, which are reported for each step). The full results for all steps of the hierarchical regression models are reported in the [online supplemental materials](#).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

shown in Figure 2. The M2IRGB  $\times$  Condition interaction remained significant,  $\beta = .24$ ,  $p = .016$ , when excluding the participants ( $n = 20$ ) who expressed suspicion about the nature of the prosocial activity and charity donation.

Because the meaning of religiosity may differ between religious and nonreligious participants, we also conducted exploratory analyses examining the key M2IRGB  $\times$  Condition interaction here and in subsequent studies when excluding participants who identified as atheist or agnostic. When excluding the 96 participants who identified as atheist/agnostic (representing 48% of the full sample), the M2IRGB  $\times$  condition was not significant,  $\Delta R^2 = .001$ ;  $\beta = .05$ ,  $p = .76$  (refer to the [online supplemental materials](#) for full analyses). We caution against the interpretation of these exploratory analyses due to the loss of power when dropping nonbelievers from analyses.

Because of the small number of people who completed prosocial tasks in this study, we also tested the key predicted interactions for religiosity variables using a binary outcome (i.e., did prosocial tasks vs. did not do any). For all religiosity variables, the overall logistic regression models were significant in predicting opting in to the prosocial tasks,  $\chi^2(N = 200, 3) = 10.81$ ,  $p = .013$  for M2IR model;  $\chi^2 = 10.86$ ,  $p = .013$  for GB model;  $\chi^2 = 11.94$ ,  $p = .008$  for M2IRGB model. For GB, no main effects were identified, for condition,  $B(SE) = 0.22(0.31)$ ,  $OR = 1.25$ ,  $p = .48$ ; for GB,  $B(SE) = 0.004(0.21)$ ,  $OR = 1.004$ ,  $p = .98$ . However, there was a significant Condition  $\times$  GB interaction,  $B(SE) = 0.72(0.31)$ ,  $OR = 2.95$ ,  $p = .022$ . For the M2IR model, in the absence of main effects for condition,  $B(SE) = 0.18(0.31)$ ,  $OR = 1.20$ ,  $p = .57$ , or M2IR,  $B(SE) = 0.18(0.21)$ ,  $OR = 1.20$ ,  $p = .39$ , the M2IR  $\times$  Condition interaction was in the same direction but was not significant,  $B(SE) = 0.52(0.31)$ ,  $OR = 1.68$ ,  $p = .095$ . Finally, in the M2IRGB model, in the absence of main effects for condition,  $B(SE) = 0.19(0.31)$ ,  $OR = 1.21$ ,  $p = .54$ , and M2IRGB,  $B(SE) = 0.14(0.22)$ ,  $OR = 1.15$ ,  $p = .54$ , there was a significant Condi-

tion  $\times$  M2IRGB interaction,  $B(SE) = 0.68(0.34)$ ,  $OR = 1.98$ ,  $p = .045$ .

**Agreeableness.** Agreeableness was associated with M2IRGB,  $r = .32$ ,  $p < .001$ , and prosocial task completion,  $r = .24$ ,  $p = .001$ . Is the relationship between M2IRGB and prosocial behavior in the context of MSI threat better explained by trait agreeableness? To answer this question, we focused on the MSI threat condition and tested whether agreeableness explained the association between M2IRGB and prosocial behavior using the PROCESS macro in SPSS (Hayes, 2012; Model 4) with analyses bootstrapped with 5,000 resamplings. The 95% CI of the indirect effect did not include zero, CI = [0.06, 0.34],  $B(SE) = 0.16(0.07)$ , providing support that agreeableness explained this relationship. The direct path from M2IRGB to prosocial tasks was reduced from  $B(SE) = 0.65(0.18)$ ,  $p = .0004$  to  $B(SE) = 0.49(0.18)$ ,  $p = .001$ , when controlling for agreeableness but it remained significant. Agreeableness does not fully explain the association of M2IRGB to prosocial tasks under MSI threat.

### Brief Discussion of Study 3

Study 3 showed that individuals who strongly endorse religious motivations toward life and belief in God are more likely to engage in prosocial behavior following MSI threat (but not in the absence of such threat). Study 3 also showed that agreeableness partially explained the association between M2IRGB and prosocial task completion within the MSI threat condition. Taken with Study 2, these data provide support for the proposal that religious motivations toward life and belief in God influence moral self-regulation. When people are confronted with a threat to MSI, M2IRGB predicts negative emotional responses (Study 2) and compensatory prosocial behaviors. However, the prosocial behavior in Study 3 only required a small investment of people's time. Would people who strongly endorse religious motivations toward life and strongly believe in God be willing to engage in more costly behavior to compensate for past transgressions? Study 4 sought to address whether this relationship would emerge when people were confronted with an opportunity to cheat for financial gain.

### Study 4

Study 4 further examined whether individuals who strongly endorse religious motivations toward life and high levels of God belief are more likely to engage in compensatory moral behavior using a different behavioral outcome: cheating. Study 4 also considered other potential explanatory variables for the association between endorsement of religiosity items and moral compensation. The results of Study 3 suggested that the association between M2IRGB and moral compensation was partially due to agreeableness, so we included a measure of agreeableness to assess whether this finding would replicate conceptually. As an initial test of the relevance of valuing moral identity to one's self-esteem, Study 4 also included a measure of moral contingencies of self-worth. This measure allowed us to examine whether moral compensation among people with high M2IRGB may be attributable to staking one's self-esteem on the moral domain. Individuals who base their self-worth on the moral domain report feeling good or bad about themselves based on their success or failure to meet their virtue-related goals. If the role of M2IRGB identified in Studies 2 and



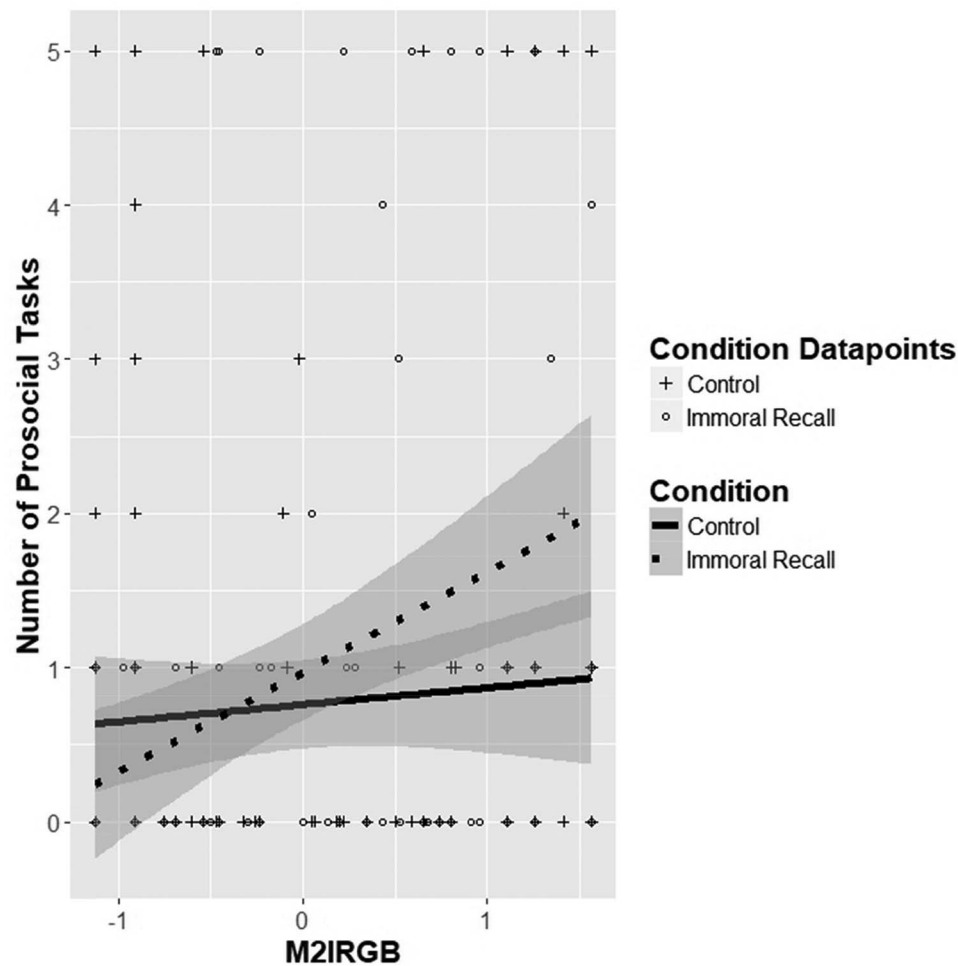


Figure 2. Religion (M2IRGB)  $\times$  Condition interaction predicting prosocial tasks, Study 3. Regression lines (generated using the ggplot2 package in R software) predicting the number of prosocial writing tasks completed from M2IRGB within each condition (control,  $\beta = .07$ ,  $p = .47$ ; or recollection of an immoral act,  $\beta = .35$ ,  $p < .001$ ), Study 3. The shaded bands around regression lines represent 95% confidence intervals. M2IRGB refers to the mean of the following three standardized items: “My whole approach to life is based on my religion,” “I try hard to live all my life according to my religious beliefs” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989), and “To what extent do you believe a Supreme being, God, exists?” (responses ranging from “God does not exist” to “God certainly does exist”; adapted from Gervais & Norenzayan, 2012).

3 is attributable to individuals staking their self-esteem on the moral domain, then we would expect this variable to explain the relationship between M2IRGB and behavior after a threat to MSI.

## Method

**Participants.** Participants were MTurk workers ( $N = 198$ , paid \$1.65) who completed the study online. Respondents with duplicate IP addresses were dropped for all but the first completion of the study (final  $N = 197$ ; 71 women, 125 men, one not reporting). Ages ranged from 18–68,  $M (SD) = 30.72 (9.67)$ . Reported ethnicities included 81.2% Caucasian/White, 5.6% Black/African American, 3% Hispanic/Latino, 8.1% Asian/Asian American, and 2% other. Table 1 reports the religious affiliations represented. Atheists/agnostics comprised 55% of the sample.

Among the religiously affiliated, 83% were from Christian denominations.

**Materials and procedure.** Participants completed demographic information, M2IR,  $M(SD) = 2.90(2.04)$ , GB,  $M(SD) = 3.03(1.15)$  (for M2IRGB,  $\alpha = .88$ ), and the agreeableness items from Study 4,  $M(SD) = 5.24(1.15)$ ,  $\alpha = .74$ . Participants also completed the Contingencies of Self-Worth Scale, which included a moral self-worth subscale (e.g., “My self-esteem would suffer if I did something unethical,” “I couldn’t respect myself if I didn’t live up to a moral code”; Crocker, Luhtanen, Cooper, & Bouvrette, 2003),  $M(SD) = 4.96(1.11)$ ,  $\alpha = .83$ . This scale was used because the format of the Contingencies of Self-Worth Scale made these moral items more inconspicuous because they were embedded with other similar items tapping different domains of self-worth.

The religiosity and moral self-worth questionnaires were embedded in numerous filler personality and well-being questionnaires to distract from the focus on morality and religion. In all, the religiosity items were separated from the manipulation by 73 items. Then, participants completed the writing tasks from Studies 1 through 3 (MSI threat,  $n = 98$ ; control topic,  $n = 99$ ).

**Cheating task.** Following the writing task, participants were instructed that they would be completing a word unscrambling task that would enable them to earn extra money for solving words correctly. They were told that they would earn \$0.10 for every correct word (of 9 possible), but that they must solve the words *in the order they appeared* to earn the money. First, participants were provided with a list of nine scrambled words (e.g., “eoshu” = house). Participants were given three minutes total to solve all nine words. They were asked to keep track of their answers while solving (i.e., they did not have to enter them) and to only report whether the answer they had was correct or incorrect. They were shown each unscrambled word on a new page and asked to report whether they solved it correctly or incorrectly. If they solved it correctly, they continued onto the next word (thus, earning more money). If they reported solving an item incorrectly, the word unscrambling task was over.

Importantly, the first two word scrambles were solvable; the third word was not. There were clearly solvable scrambles after the third one (and the ninth was unsolvable). Thus, any word scrambles that participants claimed to solve correctly past the first two words were assumed to be cheated because reaching this point entailed lying on the first impossible word. A pilot study ( $N = 70$ ) verified that third and ninth words (furrahin and diacodian, respectively)<sup>10</sup> were “impossible” to solve (i.e., no one guessed them correctly in the time allotted). The task and instructions followed prior use of this measure (e.g., Wiltermuth, 2011; Ruedy, Moore, Gino, & Schweitzer, 2013; Gino & Mogilner, 2014). On this task, any scores higher than 2 are considered cheating.

At the end of the study, participants were probed for suspicion using the same questions used in Study 3. Overall, 11.7% of participants ( $n = 23$ ) expressed suspicion about the word unscrambling task pertaining to cheating behavior or thinking the words were not real or that they were unsolvable.

## Results and Discussion

**Preliminary analyses.** Overall, 33.3% of participants cheated (reported a score higher than 2). The average number of cheated items was 6.51 ( $SD = 0.89$ ) among those who did cheat. The percentage of people who cheated did not differ by condition,  $\chi^2(1, N = 197) = 3.39, p = .64$ . Conditions did not differ on the number of cheated items,  $t(193) = 0.58, p = .56, d = 0.08$ ;  $M(SD)$ 's = control = 2.30 (3.17), MSI threat = 2.04 (3.08). There were no gender differences in cheating,  $M(SD)$ 's = 1.94(3.06) versus 2.31(3.16) for women and men respectively,  $t(192) = 0.80, p = .43, d = 0.12$ .

**Primary analyses.** Table 8 shows the results of hierarchical regression analyses testing the prediction that condition would interact with M2IR, GB, & M2IRGB to predict the number of cheated items. Table 8 also shows the  $\beta$ s predicting cheating within each condition from these variables. As can be seen, the predicted interaction emerged for M2IR (endorsing the items: “I

Table 8

Study 4: Regressions Estimates Predicting Number of Cheated Items From Religion Variables

Predictor	M2IR	GB	M2IRGB
Main effects, $\Delta R^2$	.01	.01	.01
Religiosity measure	.06	.02	.06
Condition	-.05	-.04	-.05
Interaction, $\Delta R^2$	.03*	.01	.03*
Religiosity measure $\times$ Condition	-.23*	-.15	-.23*
Condition $\beta$ s for religiosity measures			
Control	.06	.02	.06
Immoral recall	-.27***	-.19	-.27**

*Note.* M2IR = Mean of items: “My whole approach to life is based on my religion” and “I try hard to live all my life according to my religious beliefs” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989). GB = Belief in God, ranging from 1 *God does not exist* to 5 *God certainly does exist* (adapted from Gervais & Norenzayan, 2012). M2IRGB = Mean of the standardized GB and 2IR items. For M2IR  $\times$  Condition interaction,  $p = .018$ ; GB  $\times$  Condition interaction,  $p = .14$ ; M2IRGB  $\times$  Condition interaction,  $p = .021$ . This table reports statistics from the final steps of hierarchical regression models (with the exception of  $\Delta R^2$  values, which are reported for each step). The full results for all steps of the hierarchical regression models are reported in the [online supplemental materials](#).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion”) and the three-item composite (M2IRGB). Results for GB alone were in the predicted direction but not significant. Figure 3 shows regression lines predicting cheating from M2IRGB within each condition. As predicted, M2IRGB predicted less cheating within the MSI threat condition, but it was unrelated to cheating in the control condition ( $\beta$ s in Table 8). The interaction between M2IRGB  $\times$  Condition remained significant,  $\beta = -.22, p = .03$ , when excluding the participants who expressed suspicion about the cheating task ( $n = 23$ ).

When excluding the 109 participants who identified as atheist or agnostic (representing 55% of the full sample), the M2IRGB  $\times$  Condition was not significant,  $\Delta R^2 = .02$ ;  $\beta = -.23, p = .19$  (refer to the [online supplemental materials](#) for full analyses). Again, we caution against the interpretation of these exploratory analyses due to the loss of power when dropping nonbelievers from analyses.

We also tested the prediction for this study using a binary outcome (i.e., cheated vs. did not cheat on the first fake word). Overall logistic models predicting cheating from religiosity variables differed in their significance; for M2IR,  $\chi^2(N = 198, 3) = 8.35, p = .039$ ; for GB,  $\chi^2 = 3.03, p = .39$ ; for M2IRGB,  $\chi^2 = 7.36, p = .061$ . For M2IR, in the absence of main effects for condition,  $B(SE) = -0.28(0.32)$ ,  $OR = 0.76, p = .39$ , or M2IR,  $B(SE) = 0.05(0.10)$ ,  $OR = 1.05, p = .63$ , there was a significant Condition  $\times$  M2IR interaction,  $B(SE) = -0.80(0.34)$ ,  $OR = 0.45, p = .019$ . For GB, main effects for condition,  $B(SE) = -0.16(0.31)$ ,  $OR = 0.85, p = .61$ , GB,  $B(SE) = -0.002(0.14)$ ,

<sup>10</sup> These two words were used instead of the original words on this measure (Wiltermuth, 2011) because pilot testing revealed people on Mechanical Turk were already familiarized with the “impossible” to solve words on this measure.

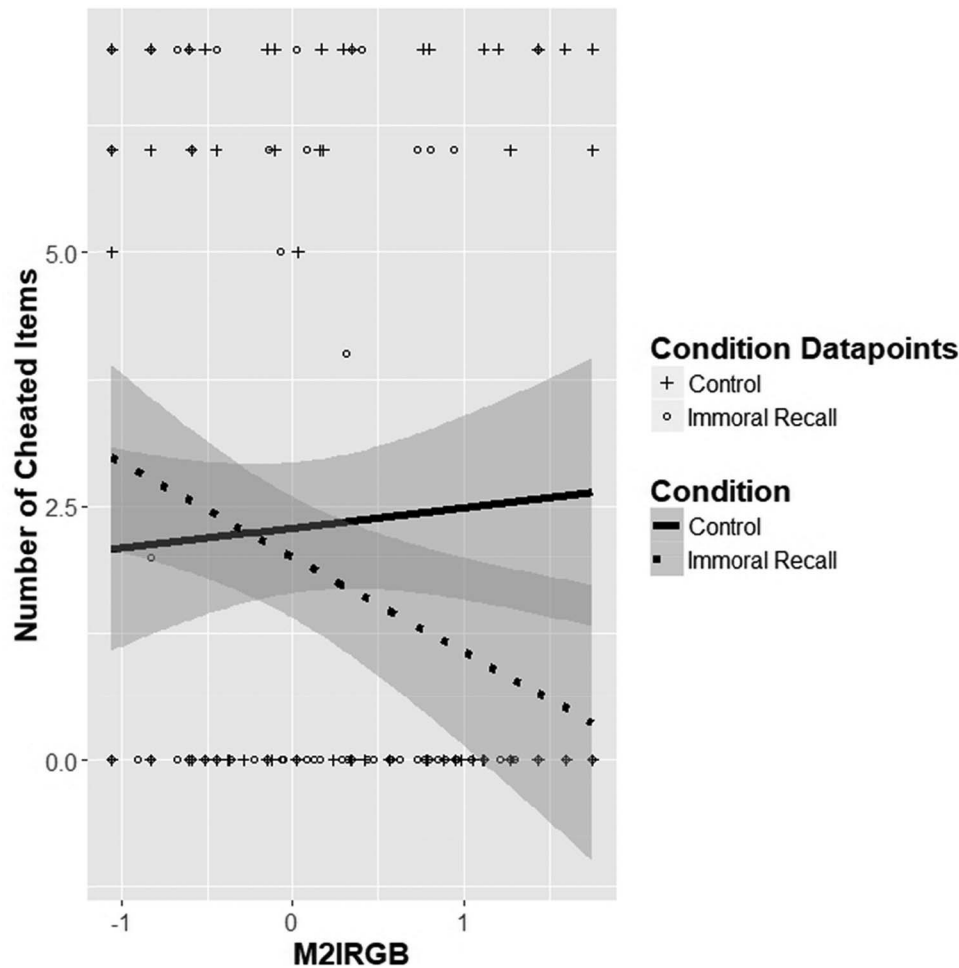


Figure 3. Religion (M2IRGB)  $\times$  Condition interaction predicting cheating, Study 4. Regression lines (generated using the ggplot2 package in R software) predicting the number of cheated items from M2IRGB within each condition (control,  $\beta = .06$ ,  $p = .55$ ; or recollection of an immoral act,  $\beta = -.27$ ,  $p = .007$ ), Study 4. The shaded bands around regression lines represent 95% confidence intervals. M2IRGB refers to the mean of the following three standardized items: “My whole approach to life is based on my religion,” “I try hard to live all my life according to my religious beliefs” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989), and “To what extent do you believe a Supreme being, God, exists?” (responses ranging from “God does not exist” to “God certainly does exist”; adapted from Gervais & Norenzayan, 2012).

$OR = 0.99$ ,  $p = .99$ , and the Condition  $\times$  GB interaction,  $B(SE) = -0.37(0.31)$ ,  $OR = 0.69$ ,  $p = .23$ , were all not significant. For M2IRGB, in the absence of main effects for condition,  $B(SE) = -0.25(0.32)$ ,  $OR = .78$ ,  $p = .43$ , or M2IRGB,  $B(SE) = 0.09(0.23)$ ,  $OR = 1.09$ ,  $p = .69$ , there was a significant Condition  $\times$  M2IRGB interaction,  $B(SE) = -0.80(0.37)$ ,  $OR = 0.45$ ,  $p = .029$ . The pattern of results within cells was consistent with predictions.

**Explanatory variables.** Analyses next turned to evaluating potential explanations for these effects.

**Agreeableness.** As in Study 3, agreeableness was associated with M2IRGB,  $r = .19$ ,  $p = .006$ ; however, in this case agreeableness was unrelated to cheating,  $r = .06$ ,  $p = .42$ . We conducted a bootstrapped mediation test with 5,000 resamplings using the PROCESS macro in SPSS (Hayes, 2012; Model 4). Results demonstrated that agreeableness did not mediate the association

between M2IRGB and cheating within the MSI threat condition; 95% confidence interval for the indirect effect =  $[-0.14, 0.33]$ ,  $B(SE) = 0.05(0.11)$ . Unlike in Study 4, it does not appear that agreeableness explains the association between M2IRGB and lessened cheating following a MSI threat.

**Moral contingencies of self-worth.** Moral self-worth was modestly related to M2IRGB,  $r = .15$ ,  $p = .03$ , but it was unrelated to cheating,  $r = -.09$ ,  $p = .20$ . A bootstrapped mediation test using 5,000 resamplings conducted with the PROCESS macro (Hayes, 2012; Model 4) demonstrated that moral contingencies of self-worth did not mediate the association between M2IRGB and cheating within the MSI threat condition; 95% confidence interval for the indirect effect =  $[-0.29, 0.08]$ ,  $B(SE) = -0.03(0.08)$ . These results suggest that M2IRGB predicts behavioral compensation for reasons other than staking one's self-worth on success or failure at moral endeavors.



## Brief Discussion of Study 4

The results of Study 4 corroborate and extend the association between M2IRGB and moral self-regulation. Although in the control condition people who strongly agree with the items “I try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion” did not cheat any more or less than others, following the MSI threat, endorsing these items predicted less cheating. This pattern of results for M2IRGB was not explained by agreeableness or moral contingencies of self-worth. Although this latter finding could mean that moral identity does not account for the association between religiosity variables and moral compensation following the MSI threat, further examination of this possibility was warranted for several reasons. There is a subtle difference between staking one’s self-esteem on moral goals and strongly valuing one’s moral identity. Some individuals might seek to behave morally (or engage in moral compensation) to repair damaged self-esteem. But others might engage in moral self-regulation regardless of self-esteem, which may be the case for people who strongly endorse religion as a life motivator and strongly believe in God. People with high M2IRGB might not be as motivated by self-esteem as by a desire to reaffirm moral identity.

Previous research has not investigated whether the moral contingencies of self-worth scale is related to moral identity, moral behavior, or religiosity variables. Indeed, in this study, staking one’s self-esteem on the moral domain was unrelated to cheating behavior,  $r = -.09$ ,  $p = .20$ . Additionally, this measure was more weakly tied to M2IRGB,  $r = .15$ ,  $p = .03$  than the measures of moral identity/moral strivings used in the preliminary dataset and Study 1 ( $r_s = .34, .33$ ,  $p_s < .001$ , respectively). These conceptual and empirical considerations suggested that the moral contingencies of the self-worth scale did not capture the valuing of moral identity that we have proposed lies at the heart of moral self-regulation. As such, in Study 5 we used an alternate measure of moral identity.

## Study 5

Study 5 sought to conceptually replicate the effect of MSI threat on the relationship between religiosity variables and prosocial behavior and to test possible explanatory variables. Study 5 also addressed a few methodological limitations and issues with the previous studies. First, because the previous studies relied on MTurk samples, in Study 5, we attempted to generalize the findings to a student sample. Demonstrating that moral compensation among people with high M2IRGB also emerges in a young adult sample from a new population would establish that the effects observed in Studies 2 through 4 were not simply attributable to some unique features of the MTurk participant sample. Another issue is that in Studies 2 through 4, religiosity variables were measured at the beginning of the studies (albeit heavily embedded within distractor measures) because of potential issues of measuring it at the end (i.e., the moral manipulation and morally relevant dependent variable could change reports of religiosity). In Study 5, we included all religion variables at the end of the study to ensure the previously observed findings were not due to inadvertently priming religion by measuring it at the beginning of the study.

In addition to these aims, the key goal of Study 5 was to test potential explanatory variables for the relationship between religiosity

variables and moral compensation following MSI threat. As we described earlier, people who report strong religious motivations toward life and belief in God may be motivated to behave morally by both secular and religious concerns. Indeed, it is quite possible that the identified role of M2IRGB in moral self-regulation may be explained by a combination of several variables. In Study 5, we endeavored to rule out variables that did not explain our effect, because it is not possible to conclude that a variable fully mediates an effect without simultaneously testing other plausible alternative variables which may also serve as mediators (Rucker, Preacher, Tormala, & Petty, 2011).

In Study 5, we examined whether moral identity accounted for the pattern observed for religiosity variables. Recall that the results from Study 1 showed that the extent to which people reported valuing morality (“moral striving”) was not altered by the MSI threat manipulation. Thus, we did not expect moral identity to change in response to the manipulation, but to serve as a stable individual difference variable that is related to religiosity variables and explains their role in moral self-regulation. For the moral identity measure, we used a subset of the moral strivings items from Study 1 that best reflected the extent to which people valued being moral.

We also measured mediators that might be affected by the MSI threat and account for the role of religiosity variables in promoting compensatory moral behavior; these included concerns about judgment from secular (oneself, other people) and religious sources (i.e., one’s religious community, God, in the afterlife concerns). We kept the measures of judgment concerns brief because they preceded the prosocial dependent variable.

## Method

**Participants.** Two hundred twenty (129 women; 91 men) undergraduate students at the University of Missouri-Columbia completed this study online in partial fulfillment of a research participation requirement in General Psychology. Ages ranged from 18 to 35 ( $M = 18.91$ ,  $SD = 1.45$ ). Ethnicities included White/Caucasian (79.5%), Black/African American (7.8%), Asian (7.8%), Hispanic/Latino (3.2%), and other (1.4%). Because the sample of students tends to be more homogeneously religious (and Christian), to ensure nonbelievers were represented in the participant sample, students who indicated they were atheists or agnostics in a premeasure at the beginning of the semester were e-mailed an advertisement to this study. The advertisements did not explain why these individuals were eligible for the study (simply that they were), did not include any mention of the purpose of this study (i.e., morality or religion), and did not offer any incentive beyond that of fulfilling research credit requirement. Table 1 reports the religious affiliations represented. Atheists/agnostics comprised 27% of the sample. Among the religiously affiliated, 95% were from Christian denominations.

**Materials and procedure.** For this online study, participants completed several personality questionnaires, the writing task, measures of proposed mediators, and then a prosocial opportunity. Following this task, participants completed demographic information and religiosity variables. At the end of the study, participants were probed for suspicion and debriefed.

**Moral identity measure.** Participants completed a four-item measure of moral identity,  $\alpha = .91$ ;  $M(SD) = 5.69(1.11)$ , which

was adapted from the measure of moral identity used in Study 1 and in Preliminary Study 2 (e.g., “I am very committed to moral values”; See the [Appendix](#)). These items were embedded in a list of 28 other items that pertained to life domains important to college students (e.g., working hard, doing well in classes, having good friendships, being healthy). All items were structured in the same manner as the moral identity items (e.g., “Being (moral, intelligent, a good friend, popular) is one of my most important goals in life,” “I am a very (intelligent, friendly, hard-working, moral) person”) to detract from the focus on the moral domain. Following this questionnaire, participants completed several filler measures of personality and well-being (30 items total) to further distract from the moral identity items completed earlier.

**MSI threat.** Participants were then randomly assigned to the control ( $n = 107$ ; writing about the path to the grocery store) or the MSI threat condition ( $n = 113$ ).<sup>11</sup> The MSI threat instructions specified to write about a time they recently acted immorally. Examples were provided (e.g., being mean, unfair, lying, or cheating) because previous use of the manipulation in this college sample indicated that people will often respond by saying they do not do anything immoral. Participants were also assured that this study is confidential and that their responses would not be tied to their identity because we were concerned that people may not be truthful about some behaviors (e.g., cheating in classes, drinking underage) due to our association with the university. In both conditions, participants were given two minutes for the writing activity.

**Concerns about judgment.** Following the manipulation, all participants were asked to respond to six items pertaining to judgments that were either of a secular or religious nature. The two secular items assessed self-judgment and concern of judgment from other people for one’s immoral behavior,  $\alpha = .58$ ,  $M(SD) = 3.23(1.39)$  (“Right now, I feel like I am not living up to my beliefs and values,” “Right now, I worry other people would judge me because I act immorally sometimes”). The four religious judgment items pertained to concerns of judgment from one’s religious community and to judgment from God or in the afterlife,  $\alpha = .88$ ,  $M(SD) = 2.96(1.58)$  (“Right now, I worry my religious community would judge me because I act immorally sometimes,” “Right now, I am worried about my chances of getting into heaven,” “Right now, I am concerned about how God would judge me,” “Right now, I am worried God may be upset with me”). These items were presented on separate pages (first questions about secular judgment concerns, then judgment from one’s religious community, then judgment from God/in the afterlife) to minimize the likelihood that responses to the items would carryover over to subsequent items.

**Prosocial task.** Following the previous questionnaire, participants were told that there was an optional task they could complete. Specifically, they were told that we were screening typing activities for use in another study on typing accuracy and time pressure. They were told that we were not permitted to pay them personally for completing these problems, but instead we would donate to a charity of their choice in exchange for their participation. There were 10 typing tasks, each earning \$.25 to charity if they were completed (thus, a total \$2.50 donation possible). Participants were presented with three secular charities that were pilot tested ( $N = 25$  students in a classroom) to be equally likable (UNICEF, United Way, Feeding America) and were asked to

choose their charity of choice if they opted in to the task (brief descriptions of each charity were provided). Participants were again reminded that this task was completely optional and that they could stop at any time before being asked to make a choice about whether they wanted to opt in. If they opted in, they were taken to the first typing task and then asked questions about the perceived difficulty of the problem and the perceived accuracy of their typing. Participants were given 90 seconds to type each passage, which consisted of boring passages about statistics and computer science taken from [Wikipedia.com](#); these ranged in length from 110–127 words. The passages were image files, so participants could not simply copy and paste the text in the box. Participants were given the opportunity to opt in or out after each typing task prior to beginning the next.

**Religiosity variables.** Following the prosocial task, participants reported extended demographic information; embedded within these were items assessing religious affiliation,<sup>12</sup> GB,  $M(SD) = 4.01(1.23)$ , and five items assessing intrinsic religiosity (excluding the three reverse coded items from intrinsic subscale; [Gorsuch, & McPherson, 1989](#)),  $\alpha = .94$ ;  $M(SD) = 3.96(1.92)$ , subsequently referred to as M5IR. The aggregate used in subsequent analyses, M5IRGB, was computed with the mean of the five standardized intrinsic religiosity items and the standardized God belief item,  $\alpha = .94$ . Participants M5IRGB did not differ by condition,  $t(218) = -1.77$ ,  $p = .08$ ,  $d = -0.24$ ;  $M(SD) = -0.11(0.91)$  for control;  $M(SD) = 0.11(0.86)$  for MSI threat (standardized values). To be consistent with analyses in Studies 2–4, we also report results for M2IR,  $\alpha = .92$ ;  $M(SD) = 3.86(2.03)$ , and M2IRGB,  $\alpha = .86$ .

After these demographic and religiosity questions, participants were probed for suspicion (using the same questions as in Studies 3 & 4) and debriefed. Overall, 8.6% of participants ( $n = 19$ ) expressed suspicion about whether the charity task may be part of the study or whether the money would really be donated to charity. After the suspicion probe, participants were debriefed and told that \$25 would be donated to each of the charities listed during the prosocial task.

## Results and Discussion

**Preliminary analyses.** Overall, 58.2% of participants opted in to the prosocial typing task. Among those who did opt in, the average number of completed typing tasks was 4.47 ( $SD = 3.45$ ). The percentage of people who opted into the typing tasks did not differ by condition,  $\chi^2(1, N = 220) = 0.79$ ,  $p = .37$ , nor did conditions differ on the number of tasks completed,  $t(218) = -0.71$ ,  $p = .48$ ,  $d = -0.09$ ;  $M(SD) = 2.42(3.31)$  for control;  $M(SD) = 2.76(3.55)$  for MSI threat. Women completed more

<sup>11</sup> To assess whether the content of the moral self-image threat writing manipulations differed as a function of M2IRGB (Studies 2–4)/M5IRGB (Study 5), the stories from Studies 2 through 5 were content analyzed. None of the content differences accounted for moral compensation among people with high M2IRGB/M5IRGB. Refer to the [online supplemental materials](#) for the full analyses.

<sup>12</sup> We attempted to distract from the religiosity items because at the very end of the study (prior to the debriefing) participants were asked questions about their motivation for completing the prosocial tasks and we did not want to prime them with religion (see [online supplemental materials](#) for these additional questions).

Table 9  
*Study 5: Regressions Estimates Predicting Prosocial Actions From Religion Variables*

Predictor	M5IR	M2IR	GB	M5IRGB	M2IRGB
Main effects, $\Delta R^2$	.02	.02	.04*	.02†	.03*
Religiosity measure	-.02	-.03	.08	-.007	.01
Condition	.03	.03	.04	.03	.03
Interaction, $\Delta R^2$	.02*	.02*	.01†	.02*	.02*
Religiosity measure $\times$ Condition	.21*	.22*	.15†	.21*	.21*
Condition $\beta$ s for religiosity measures					
Control	-.02	-.03	.09	-.01	.01
Immoral recall	.26**	.27**	.28**	.28**	.30**

*Note.* M5IR = Mean of the following items: "I try hard to live all my life according to my religious beliefs," "My whole approach to life is based on my religion," "I enjoy reading about my religion," "It is important to me to spend time in private thought and prayer," "I have often had a strong sense of God's presence" (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989). M2IR = Mean of the following items: "I try hard to live all my life according to my religious beliefs," "My whole approach to life is based on my religion." GB = Belief in God, ranging from 1 *God does not exist* to 5 *God certainly does exist* (adapted from Gervais & Norenzayan, 2012). M5IRGB = Mean of the standardized GB and 5IR items. M2IRGB = Mean of the standardized GB and 2IR items. For M5IR  $\times$  Condition interaction,  $p = .029$ ; M2IR  $\times$  Condition interaction,  $p = .020$ ; GB  $\times$  Condition interaction,  $p = .098$ ; M5IRGB  $\times$  Condition interaction,  $p = .025$ ; M2IRGB  $\times$  Condition interaction,  $p = .024$ . This table reports statistics from the final steps of hierarchical regression models (with the exception of  $\Delta R^2$  values, which are reported for each step). The full results for all steps of the hierarchical regression models are reported in the [online supplemental materials](#).

†  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

typing tasks than men,  $t(216) = 3.43$ ,  $p = .001$ ,  $d = 0.47$ ;  $M(SD)$ 's = 3.27(3.27) versus 1.69(2.91), for women and men respectively.

**Primary analyses.** Table 9 shows the results of hierarchical regression analyses testing the prediction that condition would interact with M5IR, M2IR, GB, M2IRGB, and M5IRGB to predict the number of prosocial typing tasks. As can be seen, when the number of prosocial tasks was regressed hierarchically on dummy coded condition, standardized M5IR, and their interaction, the M5IR  $\times$  Condition interaction contributed significantly (consistent with results for M5IRGB, M2IRGB, & M2IR). In a model with GB, the GB  $\times$  Condition interaction was in the predicted direction but did not reach significance. As shown in Table 9, M5IR, M2IR, GB, M2IRGB, and M5IRGB predicted prosocial task completion after MSI threat, but were unrelated to task completion in the control condition. Figure 4 displays regression lines predicting prosocial tasks from M5IRGB within each condition. The interaction between M5IRGB  $\times$  Condition remained significant,  $\Delta R^2 = .02$ ;  $\beta = .21$ ,  $p = .037$ , when excluding the participants who expressed suspicion during the debriefing ( $n = 19$ ).

When excluding the 60 participants who identified as atheist or agnostic (representing 27% of the full sample), both the M2IRGB  $\times$  Condition,  $\Delta R^2 = .06$ ;  $\beta = .41$ ,  $p = .002$ , and the M5IRGB  $\times$  Condition,  $\Delta R^2 = .06$ ;  $\beta = .38$ ,  $p = .002$ , interactions were significant (run in separate models; refer to the [online supplemental materials](#) for full analyses). Again, we caution against the interpretation of these exploratory analyses due to the loss of power when dropping nonbelievers from analyses.

The lack of any association between religiosity variables and prosocial behavior in the control group is important to note. A potential issue with administering the mediator measures pertaining to religion (e.g., afterlife concerns, fear of judgment from one's religious community) prior to the prosocial dependent variable was that it might lead people with high endorsement of religiosity items to behave more prosocially in both conditions. However, the lack

of any association between the religiosity variables and prosocial behavior in the control group assuages these concerns.

**Moral identity.** First, we examined moral identity as an individual difference variable that might account for the association between moral self-regulation and religiosity variables. As predicted, moral identity was associated with religiosity variables,  $r = .48$  with M5IR and M2IR,  $r = .39$  with GB,  $r = .49$  with M5IRGB and M2IRGB, all  $ps < .001$ , and with prosocial task completion,  $r = .24$ ,  $p < .001$ . To address all possible relationships between religiosity variables (M5IR, M2IR, GB, M2IRGB, & M5IRGB), moral identity, and condition, we ran models with the three-way interactions using the PROCESS macro in SPSS (Model 3; Hayes, 2012) bootstrapped with 5,000 resamplings. These hierarchical regression models examining potential three-way interactions are shown in Table 10. As can be seen here, in models examining M5IR, M2IR, M2IRGB, & M5IRGB, the three-way religiosity Variable  $\times$  Moral Identity  $\times$  Condition effects were significant. In the GB model, this three-way interaction did not attain significance, yet the moral identity  $\times$  Condition interaction was significant.<sup>13</sup> In subsequent analyses reported below, we used the aggregate M5IRGB measure, which was very strongly correlated with other religiosity variables;  $rs = .97$  with M2IRGB,  $.96$  with M2IR,  $.99$  with M5IR, and  $.77$  with GB, all  $ps < .001$ .

To decompose the three-way, we examined the interaction between M5IRGB and moral identity within each condition. Within the control condition, the M5IRGB  $\times$  Moral Identity interaction

<sup>13</sup> Readers familiar with moral identity literature (Mulder & Aquino, 2013) should note that consistent with past research, moral identity appeared to intensify reactions to a moral self-image threat: The moral identity  $\times$  Condition interaction trended towards significance,  $\Delta R^2 = .01$ ;  $\beta = .16$ ,  $p = .072$ , in predicting prosocial behavior. Moral identity predicted prosocial tasks after MSI threat,  $\beta = .34$ ,  $p < .001$ , but was not significantly related to prosociality in the control condition,  $\beta = .15$ ,  $p = .12$ .



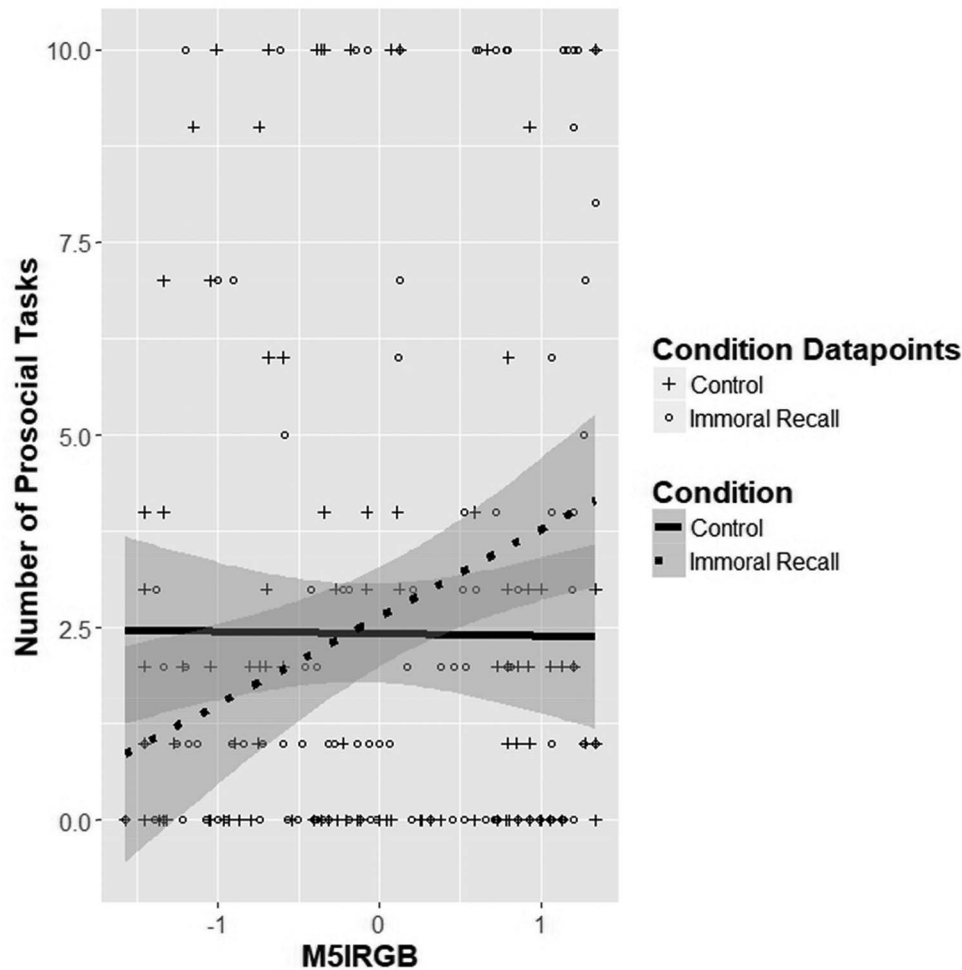


Figure 4. Religion (M5IRGB)  $\times$  Condition interaction predicting prosocial tasks, Study 5. Regression lines (generated using the ggplot2 package in R software) predicting the number of prosocial writing tasks completed from M5IRGB within each condition (control,  $\beta = .01, p = .94$ ; or recollection of an immoral act,  $\beta = .28, p = .003$ ), Study 5. The shaded bands around regression lines represent 95% confidence intervals. M5IRGB refers to the mean of the following six standardized items: “I try hard to live all my life according to my religious beliefs,” “My whole approach to life is based on my religion,” “I enjoy reading about my religion,” “It is important to me to spend time in private thought and prayer,” “I have often had a strong sense of God’s presence” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989), and “To what extent do you believe a Supreme being, God, exists?” (responses ranging from “God does not exist” to “God certainly does exist”; adapted from Gervais & Norenzayan, 2012).

was not significant,  $\Delta R^2 = .02, \beta = -.14, p = .21$ , nor were the main effects of M5IRGB,  $\beta = -.06, p = .60$ , or moral identity,  $\beta = .11, p = .37$ , in predicting prosocial tasks. However, within the moral self-image threat condition, a main effect of moral identity,  $\beta = .36, p = .002$ , (for M5IRGB,  $\beta = .06, p = .59$ ) was qualified by a M5IRGB  $\times$  Moral Identity interaction,  $\Delta R^2 = .04, \beta = .22, p = .025$ , in predicting prosocial tasks. As shown in Figure 5, following a threat to MSI, prosociality among people with high M5IRGB varied as a function of moral identity. People with high M5IRGB engaged in more prosocial tasks if they had high moral identity than if they had low moral identity.

The three-way interaction model computed using the SPSS PROCESS macro also provided estimations of the conditional effect of M5IRGB on prosociality within each condition at low and

high levels of moral identity ( $\pm 1$  SD from the mean). As can be seen in Table 11, only at high levels of moral identity within the MSI threat condition was the effect of M5IRGB on prosociality significant. All other conditional effects of M5IRGB on prosociality were not significant. The patterns of results for both GB and M5IR were identical; GB and M5IR only significantly predicted prosocial tasks at high levels of moral identity within the MSI threat condition; conditional effect for GB,  $B(SE) = 1.16(0.40), p = .005$ ; conditional effect for M5IR,  $B(SE) = 0.51(0.23), p = .029$ ; all other conditional effects in GB/M5IR models predicting prosocial tasks,  $ps > .11$ .

We next examined whether moral identity accounted for the relationship between M5IRGB and prosocial behavior within the MSI threat condition using the PROCESS macro in SPSS (Hayes,

Table 10  
*Regression Model Predicting Prosocial Tasks From Religion Variables, Moral Identity, Condition, and All Interactions Between Them, Study 5*

Predictor	M5IR	M2IR	GB	M5IRGB	M2IRGB
Main effects, $\Delta R^2$	.06*	.06*	.07*	.06*	.06*
Religiosity variable	-.07	-.11	.01	-.06	-.05
Condition	-.05	-.03	-.04	-.06	-.06
Moral identity	.11	.17	.10	.10	.12
Interactions, $\Delta R^2$	.03	.03 <sup>†</sup>	.02	.03	.03 <sup>†</sup>
Religiosity variable $\times$ Moral identity	-.13	-.03	-.12	-.13	-.09
Moral identity $\times$ Condition	.20 <sup>†</sup>	.15	.20*	.20 <sup>†</sup>	.18
Religiosity variable $\times$ Condition	.07	.11	.10	.08	.10
3-way interaction, $\Delta R^2$	.03*	.01 <sup>†</sup>	.03*	.03*	.02*
Religiosity variable $\times$ Moral identity $\times$ Condition	.26*	.18 <sup>†</sup>	.25*	.26*	.24*

*Note.* Analyses conducted using the PROCESS macro in SPSS (Hayes, 2012; Model 3). M5IR = Mean of the following items: "I try hard to live all my life according to my religious beliefs," "My whole approach to life is based on my religion," "I enjoy reading about my religion," "It is important to me to spend time in private thought and prayer," "I have often had a strong sense of God's presence" (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989). M2IR = Mean of the following items: "I try hard to live all my life according to my religious beliefs" and "My whole approach to life is based on my religion." GB = Belief in God, ranging from 1 *God does not exist* to 5 *God certainly does exist* (adapted from Gervais & Norenzayan, 2012). M5IRGB = Mean of the standardized GB and 5IR items. M2IRGB = Mean of the standardized GB and 2IR items. This table reports statistics from the final steps of hierarchical regression models (with the exception of  $\Delta R^2$  values, which are reported for each step). The full results for all steps of the hierarchical regression models are reported in the [online supplemental materials](#).

<sup>†</sup>  $p < .10$ . \*  $p < .05$ .

2012; Model 4) that employed bootstrapping analyses with 5,000 resamplings. The 95% CI of the indirect effect did not include zero, CI [0.23, 1.19],  $B(SE) = 0.57(0.23)$ , suggesting that moral identity accounted for the relationship between M5IRGB and prosocial behavior. Controlling for moral identity, the direct path from M5IRGB to prosocial tasks was not significant,  $B(SE) = 0.56(0.43)$ ,  $p = .20$ . The patterns of results for M5IR and GB were consistent with those for M5IRGB; 95% CI for indirect effect of M5IR on prosocial tasks = [0.11, 0.52], direct effect of M5IR on prosocial tasks controlling for moral identity,  $B(SE) = 0.22(0.20)$ ,  $p = .27$ ; 95% CI for indirect effect of GB on prosocial tasks = [0.11, 0.78], direct effect of GB on prosocial tasks controlling for moral identity,  $B(SE) = 0.51(0.30)$ ,  $p = .09$ .

**Examining additional potential mediators.** We next examined mediators that were measured immediately after the manipulation. Analyses assessed whether M5IRGB interacted with condition to predict concerns about secular or religious judgment.<sup>14</sup> When secular judgment concerns were regressed on condition, M5IRGB, and their interaction, main effects and the interaction were not significant,  $\pm \beta s < .09$ ,  $ps > .18$ . When religious judgment was regressed on condition, M5IRGB, and their interaction, a main effect of M5IRGB emerged,  $\beta = .30$ ,  $p = .001$ , but the main effect of condition and the M5IRGB  $\times$  Condition interaction were not significant,  $\beta < \pm .03$ ,  $ps > .77$ . These results show that the manipulation did not heighten concerns of either secular or religious judgment, either overall or as a function of M5IRGB. Moreover, concerns of judgment were either unrelated or negatively related to prosocial behavior: For secular concerns,  $r = -.26$ ,  $p < .001$ ; for religious concerns,  $r = -.08$ ,  $p = .27$ . Finally, controlling for secular,  $\beta = -.25$ ,  $p = .001$ , and religious judgment concerns,  $\beta = -.02$ ,  $p = .83$ , the M5IRGB  $\times$  Condition interaction continued to significantly predict prosocial behavior,  $\beta = .21$ ,

$p = .025$ ,  $\Delta R^2 = .04$ . These results suggest that neither secular nor religious judgment concerns explain the role of M5IRGB in promoting prosociality following a threat to MSI.<sup>15</sup>

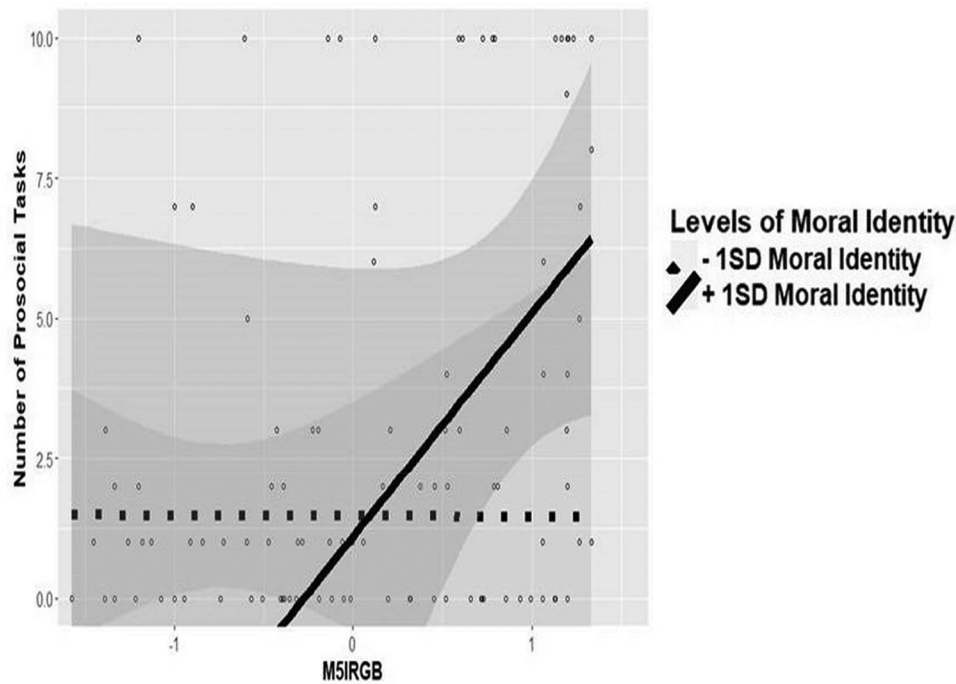
### Brief Discussion of Study 5

Study 5 demonstrated the role of moral identity in accounting for the association between M5IRGB and prosociality following a threat to MSI. Although people who endorse strong religious motivations toward life and God belief may in general espouse high levels of moral identity, these values only promoted moral behavior after a threat to moral self-image was encountered. It appears that when moral standing is threatened, it is valuing moral identity (rather than M5IRGB, per se) that spurs behavioral compensation. This finding is consistent with past research showing that moral identity predicts intensified reactions to MSI threats (Effron, 2014; Mulder & Aquino, 2013).

An additional possibility for the pattern of results is that the manipulation altered moral identity and that this change (rather than stable individual differences in moral identity) could explain the pattern of findings. However, the results from Study 1 provide

<sup>14</sup> We report results using shortened measures of these constructs (instead of using aggregate religious vs. secular judgment measures) in the [online supplemental materials](#). Analyses using shortened measures show an identical pattern to those reported here.

<sup>15</sup> To provide further assurance these did not serve as mediators, we tested each as a potential mediator using bootstrapped mediation tests with 5000 resamplings using the PROCESS macro (Hayes, 2012). The association between M5IRGB and prosocial typing tasks in the MSI threat condition was not mediated by either secular or religious judgment concerns; CI of indirect effect for test of secular judgment = [-0.04, 0.32],  $b(SE) = 0.09(0.09)$ ; CI of indirect effect for test of religious judgment: [-0.41, 0.05],  $b(SE) = -0.11(0.11)$ .



**Figure 5.** Religion (M5IRGB)  $\times$  Moral identity interaction predicting prosocial tasks within the moral self-image threat condition, Study 5. Regression lines (generated using the ggplot package in R software) predicting the number of prosocial typing tasks from M5IRGB for individuals  $\pm 1$  SD from the mean on moral identity, within the moral self-image threat condition in Study 5. The shaded bands around regression lines represent 95% confidence intervals. A main effect of moral identity,  $\beta = .36, p = .002$ , was qualified by a M5IRGB  $\times$  moral identity interaction,  $\Delta R^2 = .04, \beta = .22, p = .025$ . M5IRGB refers to the mean of the following six standardized items: “I try hard to live all my life according to my religious beliefs,” “My whole approach to life is based on my religion,” “I enjoy reading about my religion,” “It is important to me to spend time in private thought and prayer,” “I have often had a strong sense of God’s presence” (from Intrinsic Religiosity subscale, Gorsuch & McPherson, 1989), and “To what extent do you believe a Supreme being, God, exists?” (responses ranging from “God does not exist” to “God certainly does exist”; adapted from Gervais & Norenzayan, 2012).

evidence against this possibility. The four-item measure of moral identity used here was included as a dependent variable in Study 1,  $\alpha = .86; M(SD) = 5.23(1.13)$ , and this measure did not change in response to the MSI threat manipulation,  $t(167) = 0.48, p = .63$ ,

**Table 11**  
*Conditional Effect of M5IRGB on Prosocial Tasks at Values of Moral Identity and Condition, Study 5*

Condition	<i>B</i>	<i>SE</i>	95% CI
Control condition			
Low moral identity	0.29	0.65	[−0.98, 1.57]
Mean moral identity	−0.21	0.41	[−1.02, 0.59]
High moral identity	−0.72	0.39	[−1.69, 0.25]
Moral self-image threat condition			
Low moral identity	−0.72	0.71	[−2.12, 0.67]
Mean moral identity	0.24	0.45	[−0.64, 1.12]
High moral identity	1.21*	0.51	[0.20, 2.22]

*Note.* Analyses conducted using the PROCESS macro in SPSS (Hayes, 2012; Model 3). Low/High refers to  $\pm 1$  SD from mean of standardized moral identity. M5IRGB was calculated as described in the note for Table 10.

\*  $p < .05$ .

$d = 0.07, M(SD) = 5.28(1.14)$  in control;  $M(SD) = 5.19(1.14)$  in MSI threat condition. In addition, when this 4-item moral identity measure was regressed on M5IRGB, condition, and their interaction, a main effect of M5IRGB emerged,  $\beta = .34, p = .001$ , but the interaction was not significant,  $\beta = .08, p = .40$ . Considered in conjunction with the results from Study 5, these findings suggest that it is stable individual differences in moral identity that propel moral behavior among people with high M5IRGB after considering a moral failing, rather than a temporary decrement in moral identity.

Importantly, the results from this study also speak against the possibility that fear of judgment from either religious or secular sources mediate the association between M5IRGB and moral behavior following a threat to MSI. Although it seemed plausible that concerns about judgment from God and one’s religious community, as well as fear of negative consequences in the afterlife, may cause people with high M5IRGB to behave more morally following a threat to MSI, there was no support of these possibilities. In addition, neither secular nor religious concerns of judgment promoted prosocial behavior, showing that although these concerns reflect some distress about one’s behavior, they do not motivate people to actually behave more morally.



### Role of Religious Affiliation: Merged Findings

The present findings demonstrate that people who strongly agree with the items "I try hard to live all my life according to my religious beliefs" and "My whole approach to life is based on my religion," and people who report strong belief in God exhibit heightened compensatory moral behavior and negative emotions in the face of moral self-image threat. As noted previously, the operationalization of religiosity includes a host of potential measures. Would another operationalization, religious affiliation, show similar results to those reported thus far? We conducted analyses to address this question. To provide more power to detect differences between religious groups, we merged all studies with behavioral outcomes (Studies 3 through 5) after first ensuring that religious affiliation was coded similarly across samples ( $N = 617$ ). Prior to analyses, the dependent variables in Studies 4 and 5 were standardized; the outcome in Study 4 was multiplied by  $-1$  so that the directionality of results in all studies was consistent. Thus, higher (positive) values reflect more moral behavior. Each study was given a code in the merged dataset. To compare the religious versus nonreligious, atheists and agnostics were coded as 0; all other religious affiliations were coded as 1. Participants who selected their religion as "other" or "spiritual but not religious category" (only included in Studies 2 and 3) were excluded from analyses (final  $N = 572$ ).

We first examined a model with study treated as a factor, along with religious affiliation (religious vs. nonreligious), and condition (control vs. immoral recall). In this model, there were no main effects, two, or three-way interactions with the study factor, all  $F$ s  $< 1.51$ , all  $p$ s  $> .22$ ; the only significant effects were a main effect of religious affiliation,  $F(1, 561) = 14.04$ ,  $p < .001$ , and the religious affiliation  $\times$  Condition interaction,  $F(1, 561) = 4.13$ ,  $p = .043$ . Because study did not interact with any other factors, we dropped it as a factor and instead treated it as a covariate (a vector of dummy codes). Table 12 presents a model predicting standardized prosocial behaviors from religious affiliation and condition, along with two dummy coded variables representing studies entered as covariates. As shown in this table, there was a main effect of religious affiliation which was qualified by a religious affiliation  $\times$  Condition interaction.

Table 12  
Merged Data, Studies 3 Through 5, ANOVA Predicting  
Standardized Behavioral Outcomes by Religious Affiliation and  
Condition, Condition Added as Covariate

Variable	<i>df</i>	<i>F</i>	Partial $\eta^2$
Model	5	3.75*	.03
Covariates			
Study dummy 1	1	0.03	.000
Study dummy 2	1	0.02	.001
Main effects			
Religious affiliation	1	14.08**	.03
Condition	1	0.64	.001
Interaction			
Condition $\times$ Religious affiliation	1	3.93*	.007

Note.  $N = 572$ . For religious group, 0 = atheist/agnostic; 1 = all religiously affiliated besides "other" and "spiritual but not religious."  
\*  $p < .05$ . \*\*  $p < .01$ .

Table 13

Merged Data, Studies 3 Through 5, Comparisons of  
Standardized Means for Behavioral Outcomes By Religious  
Affiliation & Condition

Variable	Religiously affiliated	Nonreligious	Religious vs. Nonreligious within condition	
			<i>t</i>	<i>df</i>
Control	0.03	-.12	1.26	287
Immoral recall	0.24	-.22	3.89**	282
Control vs. Immoral within religious affiliation				
<i>t</i>	1.71 <sup>†</sup>	0.97		
<i>df</i>	308	261		

Note. Cell *ns* range from 128 to 156. For religious affiliation, 0 = atheist/agnostic; 1 = all religiously affiliated besides "other" and "spiritual but not religious." The "Religious vs. Nonreligious within condition" results compare the religiously affiliated and the nonreligious within each condition (i.e. whether they differ in the control or immoral recall condition). The "Control vs. Immoral within religious affiliation" results compare whether the religiously affiliated (or nonreligious) differed between the control and immoral recall conditions.

<sup>†</sup>  $p < .10$ . \*\*  $p < .01$ .

We next compared the standardized means on the dependent measures as a function of religious affiliation status and condition. As shown in Table 13, within the MSI threat condition, the religiously affiliated exhibited stronger moral behavior (coded here as more prosocial behavior and less cheating) than the nonreligious. Also, the religiously affiliated did marginally more moral tasks in the MSI threat condition than in the control. These results show that religious affiliation predicted moral behavior and negative emotions in a similar manner to M2IRGB after the immoral recall manipulation, though the pattern of results was weaker for religious affiliation.

We conducted additional analyses, shown in the online supplemental materials, examining potential interactions between religious affiliation and continuous religiosity (i.e., M2IRGB & M5IRGB), as well as potential differences in the strength of moral compensation in different religious groups (where there was a large enough  $n$  to justify analyses; i.e., Catholics, Protestants, Christians). In no case did religious affiliation interact with the continuous religiosity composites. Also, religious groups exhibited similar patterns of moral compensation.

### General Discussion

Whether religion relates to moral behavior is controversial. Research has begun to identify specific conditions when religiosity variables promote moral behavior (e.g., when religion is made salient by contextual cues). The present studies examined how agreement with the items "I try hard to live all my life according to my religious beliefs" and "My whole approach to life is based on my religion," belief in God, as well as religious affiliation influence three aspects of moral self-regulation: moral identity, emotions experienced in response to moral transgressions, and compensatory prosocial behaviors in response to moral failings. Based on the idea that religious motivations toward life and belief in God relate to a strong emphasis on morality (Preliminary

Studies 1 and 2), we proposed that these variables would predict negative emotions and moral behaviors following a threat to moral self-image. Five studies examined various aspects of this proposal. As expected, endorsement of these items predicted higher self-reported vigilance for immorality (moral tracking) and greater negative emotions following a reminder of personal immorality. Perhaps most importantly, endorsement of these items significantly predicted compensatory behaviors after a reminder of personal immorality. The consistent pattern for emotions and behavioral indications of honesty and generosity supports the possibility that moral self-image threats facilitate a link between religious faith and prosocial outcomes. Participants who strongly agreed with the items “I try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion,” and who reported strong belief in God were more likely to engage in prosocial acts for charity and less likely to cheat for money when their moral self-image was threatened but *not* within the control conditions. This pattern of results suggests that religious motivations toward life and belief in God do not promote moral behavior in a straightforward way. Rather, these variables play a role in prosocial behavior only when contextual factors spur such behavior (and moral identity is highly valued).

### Features of Religion That May Promote Compensatory Moral Behaviors

As noted earlier, the optimal way to conceptualize religiosity is a matter of some controversy, prompting us to explore how various operationalizations of religion related to moral identity, emotions, and compensatory moral behaviors in the present studies. Across studies, intrinsic religiosity items were most consistently predictive of compensatory prosocial behaviors; God belief and religious affiliation were less robust predictors, though they exhibited similar patterns of results to intrinsic religiosity items. Intrinsic religiosity has a rich theoretical and empirical history, and the items we employed here are from the most widely used contemporary measure of the construct (e.g., Cohen et al., 2017; Hill, 2005). Past studies exploring the link between religion and moral identity have employed measures of intrinsic religiosity (e.g., Johnston et al., 2013; Vitell et al., 2009). Our finding that composites of intrinsic religiosity items predict compensatory moral behavior and moral identity dovetail nicely with past studies and theorizing suggesting that people who are strongly committed to their religion are apt to report valuing morality. In contrast, it did not appear that GB and religious affiliation were quite as influential to people’s tendency to engage in prosocial tasks following the MSI threats. Belief in God or a higher power may not capture the extent to which individuals have committed themselves to broader moral prescriptions of religious faith. Similarly, there is great variability in the extent to which people who are religiously affiliated find their religion critical to their lives, helping to explain why general religious affiliation may be less relevant than the extent to which people personally internalize the values of their religion.

Past theorizing has posited that believing in God may increase people’s propensity to behave morally (e.g., Norenzayan & Shariff, 2008; Purzycki, 2013). Consistent with this, our measure of God belief was related to valuing morality and to experiencing stronger negative emotions in response to an MSI threat. Although the strength of belief in God was a less consistent predictor of

compensatory moral behavior than intrinsic religiosity in these studies, that could be attributable to using a one-item, and hence, less reliable measure. Future research using longer or more multidimensional measures of religious beliefs would be necessary to further compare the effects of God belief versus more general commitment and motivation toward one’s religion. Uncovering the complex functions and interplay among religious beliefs, attitudes, and motivations in their relation to morality is an important area with many intriguing open questions.

### Mechanisms Explaining Compensatory Moral Behaviors

The present results also answer a key question posed earlier, “Why do religiosity variables influence moral self-regulation?” We tested various possible explanatory variables.<sup>16</sup> It seemed plausible that moral compensation among people with strong religious motivations toward life and belief in God may be caused by concerns about one’s fate in the afterlife or concerns of judgment from God or one’s religious community. However, MSI threat did not heighten these concerns among people with high M5IRGB in Study 5, and none of these variables promoted prosocial behavior. In addition to these proximal mediators, we tested the influence of individual differences, including trait agreeableness, moral contingencies of self-worth, and moral identity. Although agreeableness partially mediated the association between M2IRGB and prosocial behavior in Study 3, this finding did not replicate in Study 4, providing evidence that agreeableness is an unlikely explanatory variable for these effects. Instead, the results of Study 5 suggest that moral identity (which is linked to religiosity variables) accounts for the dynamic between moral self-image threats and moral behavior.

The complexity of religion and the fact that it likely involves multiple processes in its association to prosocial behavior has made identifying explanatory variables of these links difficult (Saroglou, 2013). Finding that moral identity influences moral self-regulation processes among people who report strong belief in God and religious motivations toward life provides some insight into why religiosity variables may promote prosociality in some specific circumstances (e.g., when religion is primed, when reputation concerns are activated): Perhaps these circumstances may heighten awareness of people’s moral values, much like the MSI threat manipulation did here. The results of Study 1 showed that the MSI threat heightened people’s admission of moral failings, regardless of their level of M2IRGB. However, the results of Study 5 showed that these changes in moral self-image are most likely to encourage moral behavior among people with high moral identity. These results converge with past research showing that people who strongly value moral identity are especially likely to behave more

<sup>16</sup> Study 2 showed that M2IRGB was associated with experiencing more negative affect following a moral self-image threat. In the [online supplemental materials](#), we describe a pilot study that examined whether negative emotions experienced after the MSI threat also served as a mediator of compensatory moral behavior among people with high M2IRGB. Results showed that dissonance and moral emotions (measured after the moral self-image threat) were completely unrelated to prosocial behavior. Thus, although the MSI threat encourages moral emotions and dissonance among people with high M2IRGB, these emotions do not appear to explain subsequent behavior.

morally following a moral transgression (Mulder & Aquino, 2013) and to bolster moral credentials after a potential moral threat (Effron, 2014).

Religious prosociality has often been viewed with skepticism (e.g., Galen, 2012), and thought to be motivated purely by egoistic reasons or a need to defend one's reputation (e.g., Batson & Gray, 1981; Batson et al., 1989; Norenzayan & Shariff, 2008). Although we found that moral identity explained heightened compensatory moral behavior among people with high M5IRGB, we note that myriad other egoistic or altruistic reasons may underlie the valuation of morality among these people. Indeed, the highly contextualized nature of religious prosociality suggests that the motivations underlying religious people's sense of morality may be more in service of egoistic concerns. People may pursue moral identity (or religion) for self-enhancing motivations, such as feeling that one is morally superior to others or displaying one's prosociality publicly in hopes of social acclaim. Self-enhancing motives may make people more prone to report valuing morality as well as religion (e.g., Sedikides & Gebauer, 2010), as both confer the means to self-enhance.

### Constraints on Generality

A strength of the present studies is the consistent pattern of conceptual replications across Studies 3 through 5. However, the propositions in our studies were examined within a limited set of conditions, which likely contributed to the pattern of findings. The current studies only illuminated moral compensation among participants from certain samples using specific religiosity variables, a circumscribed set of prosocial and moral behaviors as outcomes, and one specific moral threat manipulation. We describe each of these considerations in turn.

Because our participant samples were drawn from Mechanical Turk and undergraduate students at the University of Missouri-Columbia, the present findings may be limited to people representative of these populations. Perhaps, people with high M2IRGB/M5IRGB in these samples were more prone to exhibit amplified responses to MSI threats. It is also possible that the association between M5IRGB and the specific moral identity measure used in Study 5 may have been especially strong in this particular student sample, thus heightening the likelihood that it would account for compensatory moral behavior among people with high M5IRGB. Participants in these studies were also from primarily Christian religious denominations, and they also included a high representation of atheists/agnostics, which may have contributed to the strength of the patterns of findings. Another important feature of these studies was participant naiveté, which is becoming increasingly uncommon on popular participant crowdsourcing websites. The studies using Mturk samples were conducted in 2013–2014, and since then research on Mturk has proliferated (e.g., Stewart et al., 2015). Many participants are becoming increasingly aware of research manipulations of prosociality and immoral behavior, making these types of dependent variables less feasible for these samples. To increase the odds of replicating these findings, it would be important to use participants with comparable naiveté to experimental techniques and who are in cultural contexts similar to those for our Mturk and university student participants (i.e., in a country with a majority of religiously affiliated citizens where there is a prominent stereotyped religion/morality association; at a

university with a majority of religiously affiliated students as there is at the University of Missouri-Columbia).

Although we used three commonly employed operationalizations of religion and religious beliefs in the present studies, there are many additional conceptualizations of religion. Indeed, the multidimensionality of religion complicates the identification of a precise aspect that may promote moral behavior. The present results suggest that participants in Studies 3–5 who report high belief in God and strongly agree with the items “I try hard to live all my life according to my religious beliefs” and “My whole approach to life is based on my religion” exhibit more moral and prosocial behaviors after a threat to moral self-image, but not in the absence of such threat. If the items we used accurately captured intrinsic religiosity and God belief, then it appears that people's general dispositions toward being committed and motivated toward their specific religion as well as believing in a deity are likely to promote more moral behaviors following the consideration of moral shortcomings. However, these items capture broad attitudes toward religion and ontological beliefs, and they may have several distinct components which independently impel compensatory moral behaviors. Moreover, there are many other aspects of religion, such as religious fundamentalism and religious quest orientation, that may relate to morally relevant behaviors and compensatory behaviors aimed at restoring one's moral self-image. It would be valuable for future research to examine whether additional measures of religion—and other secular ideological beliefs that provide a moral code of behavior—relate to compensatory moral behavior.

Another consideration is the contexts and specific behaviors involved in these studies that may have facilitated the patterns of findings. All studies were conducted online, and the anonymity of participants in these studies was likely integral to the contextual effects of religiosity: In less anonymous contexts (i.e., in lab studies) religiosity may predict prosociality in the control group and not merely as a function of moral self-image threat due to heightened reputational concerns. Less anonymous contexts could also heighten prosociality among the nonreligious, as awareness of stereotypes of atheists may heighten their need to defend their morality. The impersonal nature of prosocial and cheating behaviors that were used in Studies 3–5 may have also contributed to the results. If people are presented with more interpersonal prosocial opportunities following an MSI threat, then perhaps people with low and high M2IRGB will be equally likely to partake in the actions.

Finally, one commonly used MSI threat manipulation was employed throughout all the studies, but we did not examine the effects of other manipulations of moral threats. It is possible that different manipulations would alter the association between religiosity variables and compensatory moral behaviors. Moreover, another factor that could have contributed to the observed pattern of results is the severity of stories that participants wrote about. The results of a content analysis (see [online supplemental materials](#) for full description) suggested that participants in the MSI threat condition wrote about low severity transgressions (*Ms* range from 1.41 to 2.74 on rating scale where 1 = *not at all severe* and 7 = *extremely severe*). For example, some of the stories participants wrote about involved lying or gossiping about people. Across studies, story severity was generally unrelated to dependent variables and to religiosity (see [online supplemental materials](#)).



Yet, it is possible that the pattern of findings observed here was due to the fact that participants wrote about minor transgressions. Perhaps, if people reflected on the *most* immoral action they have ever done, they may exhibit increased compensatory moral behavior regardless of their M2IRGB.

If the measures we used accurately captured participants' religiosity and God belief, then we can conclude that some forms of religiosity can heighten the tendency to engage in some prosocial behaviors in response to a specific type of moral self-image threat in populations representative of Mechanical Turk or undergraduate students at the University of Missouri-Columbia. However, if our religiosity variables, manipulation, or prosocial outcomes represent more circumscribed or specific aspects of the underlying variables, or if our samples were somehow distinct, then the conclusions of these studies are more restricted and may not apply to new samples. Because of these various considerations which limit the generalizability of the findings, it would be valuable for future research to conduct preregistered replications of these studies in new samples using new conceptualizations of religion and prosocial behaviors, as all of these aspects of the studies may hinder the generality of the present findings (e.g., Simons, Shoda, & Lindsay, 2017). These replications can help to identify important boundary conditions of the findings identified here and are necessary before broader conclusions can be reached regarding the role of religion variables in moral self-regulation processes.

### Strengths, Limitations, and Future Directions

The present studies had several strengths, including the utilization of large samples that were demographically diverse and included religiously affiliated and nonreligious participants. The validity of the religiosity items used was demonstrated in preliminary data and the presumed effect of the manipulation on moral self-image was verified in Study 1. In the context of these strengths, a consideration of limitations is warranted. One potential limitation is that most of these studies (1 through 4) used participants from Mechanical Turk because of their demographic and religious diversity. Previous research indicates that people using Mechanical Turk may be particularly familiar with experimental paradigms and less naïve than college student samples (e.g., Chandler, Mueller, & Paolacci, 2014). It is also possible that participants from Mechanical Turk may be less inclined to carefully attend to instructions. Numerous steps were taken to attend to these concerns, specifically, (a) prohibiting participants with duplicate IPs and worker identification numbers from participating in multiple studies or within the same study, (b) confirming that participants writing comported with the instructed topics, (c) including attention checks in all studies, and (d) including extensive suspicion probing at the end of studies. Across studies, 97–99% of participants successfully completed the attention check items. The inclusion of comprehensive suspicion probes enabled the identification of participants who were less naïve about the studies' intention than other participants. Examination of the results when excluding participants who conveyed suspicion indicated that the present findings did not differ as a function of participant naiveté.

Another potential limitation is the religiosity items utilized in the present studies. Because the intrinsic religiosity subscale items we employed assume that participants have a religion, they may have resulted in variable or unreliable responses from

atheist or agnostic participants who were unsure how to respond to the item content. We addressed this issue in Preliminary Study 1 but it remains a concern. Future studies can alleviate this problem by including better measures of nonreligiousness (e.g., The NonReligious-NonSpiritual Scale; Cragun, Hammer, & Nielsen, 2015).

The current studies suggest that a pattern consistent with compensatory moral behavior is evident among Christians and participants with related religious denominations (who made up the largest proportion of religiously affiliated participants). However, the underrepresentation of individuals in other religious groups (e.g., Buddhists, Jews) precluded a more fine-grained analysis of differences between these groups. An important avenue for future research is examining whether particular religious groups act differently in response to moral self-image manipulations. Religious groups may differ in the extent to which they believe that living a moral life is necessary to achieve salvation in an afterlife as well as the means through which they believe they should atone for moral transgressions. These beliefs may influence the propensity to engage in moral actions to counteract moral lapses. Moreover, religions differ in the degree to which God is viewed as forgiving. As noted previously, believing in a forgiving God can encourage cheating, whereas belief in a vengeful God deters cheating (Shariff & Norenzayan, 2011). It is possible that people who believe in a forgiving God would be less likely to engage in moral compensation because the immoral action may be interpreted as less damaging to one's overall moral standing in God's view. A focus on differences between religious groups as well as on views of God can help to elucidate how specific religious doctrines relate to moral self-regulation.

Research on the relationship between religiosity and moral behavior has often involved studying short instances of behavior (whether naturalistic or controlled) without experimental manipulations. In people's everyday lives moral self-regulation is a more dynamic process that is shaped by many factors, such as fluctuations in moral self-image. Utilizing experimental designs that can better approximate the factors that shape moral decisions in people's everyday lives may help to better clarify how religion influences morality. If the association between religiosity variables and moral behavior was only assessed in the control condition in Studies 3 through 5, one may rightly conclude religiosity shares no association with moral behavior. However, after a moral self-image threat, people's endorsement of religious motivations toward life did predict heightened moral behavior. Determining the conditions under which religiosity variables encourage moral behavior will contribute to the developing understanding of the multifaceted relationship between religion and morality.

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## Appendix

## Moral Questionnaire Items From Study 1 (and Preliminary Study 2/Study 5)

Item	Corrected item–total correlations
Moral strivings	
Acting morally is one of my best qualities.	.79
I am a very moral person.*	.78
I am very committed to moral values.*	.74
I am proud of how moral I behave.	.73
Living up to a set of moral ideals is very important to me.*	.70
Being a moral person is one of my most important goals in life.*	.65
People admire how moral I behave.	.58
I always strive to do the right thing.	.57
I always live up to my moral aspirations.	.55
I am a more moral person than my peers.	.51
Moral failings	
I don't always live up to my moral standards.	.60
Some people think of me as cold and calculating.	.60
I sometimes act immorally.	.59
Some people think I'm selfish and egotistical.	.58
If necessary, I am willing to manipulate people to get what I want.	.48
Although I try, I am not as morally good as I could be.	.41

*Note.* Items with asterisks were used as a moral identity measure in Preliminary Study 2 and in Study 5.

Received June 24, 2016  
Revision received April 8, 2018  
Accepted May 10, 2018 ■

### New Policy for the *Journal of Personality and Social Psychology*

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Preference will be given to submissions by researchers other than the authors of the original finding, that present direct rather than conceptual replications, and that include attempts to replicate more than one study of a multi-study original publication. However, papers that do not meet these criteria will be considered as well.

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