

Reactive Approach Motivation (RAM) for Religion

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In 3 experiments, participants reacted with religious zeal to anxious uncertainty threats that have caused reactive approach motivation (RAM) in past research (see McGregor, Nash, Mann, & Phills, 2010, for implicit, explicit, and neural evidence of RAM). In Study 1, results were specific to religious ideals and did not extend to merely superstitious beliefs. Effects were most pronounced among the most anxious and uncertainty-averse participants in Study 1 and among the most approach-motivated participants in Study 2 (i.e., with high Promotion Focus, Behavioral Activation, Action Orientation, and Self-Esteem Scale scores). In Studies 2 and 3, anxious uncertainty threats amplified even the most jingoistic and extreme aspects of religious zeal. In Study 3, reactive religious zeal occurred only among participants who reported feeling disempowered in their everyday goals in life. Results support a RAM view of empowered religious idealism for anxiety management (cf. Armstrong, 2000; Inzlicht, McGregor, Hirsch, & Nash, 2009).

Keywords: anxious uncertainty, idealistic conviction, religious zeal, self-esteem, reactive approach motivation

We shall see how infinitely passionate a thing religion at its highest flights can be. Like love, like wrath, like hope, ambition, jealousy, like every other instinctive eagerness and impulse, it adds to life an enchantment which is . . . a new sphere of power. When the outward battle is lost, and the outer world disowns him, it redeems and vivifies an interior world which otherwise would be an empty waste. (James, 1902/1958, p. 58)

In *The Varieties of Religious Experience*, William James (1902/1958) concludes that “religious rapture” and “moral enthusiasm . . . incline the sand and grit of self-hood to disappear” (p. 240) and unify the “discordant self” (p. 399). Eager extremes of religious passion are rewarding because they can trump the frustrating friction of everyday life. James’s view is consistent with recent research on reactive approach motivation (RAM; McGregor, Nash, Mann, & Phills, 2010). Both suggest that idealistic and empowering religious zeal should be particularly appealing in the face of anxious uncertainty. Here we investigate the hypothesis that anxious uncertainty about important life goals will cause religious zeal.

Anxious Uncertainty and RAM

A basic response to conflict and uncertainty in rats, dogs, humans, and other vertebrates is anxious arousal that persists while the animal remains motivationally conflicted (Gray & McNaughton, 2000). The anxious arousal can be relieved, however, if the animal can reengage unequivocal approach of any unimpeded

goal, even with no instrumental link to the source of anxiety (Marigold, McGregor, & Zanna, 2010). Such palliative RAM may provide relief by constraining attention to information relevant to the focal goal (Gable & Harmon-Jones, 2008; Harmon-Jones, Amodio, & Harmon-Jones, 2009; Harmon-Jones & Gable, 2009; McGregor et al., 2010; Shah, Friedman, & Kruglanski, 2002). This constraint may account for the resilience associated with approach motivation-related patterns of brain activity (Gianotti et al., 2009; Jackson et al., 2003; Tomarken & Keener, 1998; cf. Elliot, 2008). Indeed, approach-motivated patterns of brain activity are negatively correlated with error-related activity in the anterior cingulate cortex (ACC; Nash, McGregor, & Inzlicht, 2010). The ACC is the “cortical alarm bell” that registers goal conflict and uncertainty (Gray & McNaughton, 2000, p. 137).

Ideals and ideologies may provide an efficient means for humans to activate approach motivation for palliative purposes because ideals essentially function as abstract goals. Ideals are conceptual priorities that guide more concrete subordinate goals (Carver & Scheier, 1998; Higgins, 1996; Verplanken & Holland, 2002). Focusing on ideals could provide a means for eagerly approaching a transcendent goal as a way to insulate oneself from anxiety arising from frustrated or uncertain concrete goals (McGregor, 2004, 2006; McGregor et al., 2010). Indeed, salience of phenomena related to meanings, ideals, or values predicts the pattern of relative left frontal neural activity that is characteristic of approach motivation (Amodio, Shah, Sigelman, Brazy, & Harmon-Jones, 2004; Shriram & Martin, 2005; Urry et al., 2004).

Ideals may be further suited as goals for RAM because they can easily be promoted in the privacy of one’s own imagination, free from conflict and impedance in the temporal realm. Few resources need be committed to derive the palliative benefit of ideals. Indeed, just a few minutes of focus on personal ideals, convictions, or ideologies can relieve preoccupation with anxious uncertainties in people’s lives (McGregor & Marigold, 2003, Study 4; McGregor, Nail, Marigold, &

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Kang, 2005, Study 4; McGregor, Zanna, Holmes, & Spencer, 2001, Study 1; see also Koole, Smeets, Van Knippenberg, & Dijksterhuis, 1999)—the anxious uncertainties can remain accessible to awareness but without seeming so motivationally urgent (McGregor, 2006). Abstract ideals can also never be fully captured, which may preserve their motivational value from habituation and disillusionment (Klinger, 1977). Promoting ideals may thus provide economical and reliable resilience in the face of anxious uncertainty.

With such benefits, eagerly engaging ideals could become a kind of palliative compulsion for humans. Eagerly engaging concrete goals and rituals in the face of anxiety is a common compulsive response in other animals. For example, repetitive tail chasing, barking or howling at no apparent object, and excessive grooming are canine reactions to motivational conflicts that can be relieved by anxiolytic drugs (Luescher, 2004). As with extremely idealistic convictions, such compulsions may “seem abnormal because they are displayed out of context and are often repetitive, exaggerated or sustained” (Luescher, 2004, p. 234), without apparent instrumental value.

Recent experimental research has indeed demonstrated that when confronted with anxious uncertainty, idealism mediates and moderates peoples’ tendency toward RAM (McGregor et al., 2010). Experimentally manipulated anxious uncertainty caused implicit, explicit, and behavioral neuroscience evidence of increased approach motivation, especially if ideals had been primed (Study 4) or if idealistic goals had been spontaneously exaggerated by participants in response to the anxious uncertainty (Study 3). Furthermore, the domain of the reactive idealism was unrelated to the domain of the threat (Study 3), presumably because the function of the idealism was merely to activate approach motivation for relief.

Approaching Religious Ideals

The present research assesses the hypothesis that religious zeal can be used as a mode of idealistic RAM. In William James’s examples, converts’ accounts of their zeal brimmed with notions of heightened energy, clarity, resilience, power, and single-minded resolve (James, 1902/1958), phenomena closely related to approach motivation (e.g., Drake & Myers, 2006; Elliot & Thrash, 2002; Harmon-Jones & Allen, 1997; Harmon-Jones et al., 2009; Keltner, Gruenfeld, & Anderson, 2003). One convert likened his religious experience to “soaring on the wings of faith” (James, 1902/1958, p. 193), and another noticed that his boyhood vigor and energy for play had returned (James, 1902/1958, pp. 164–165). Other converts marveled at the peace of mind religion brings: “It brought light with it, and commanded a silence in my heart of all those tumultuous thoughts, that did before use, like masterless hell-hounds, to roar and bellow, and make a hideous noise within me” (James, 1902/1958, p. 168). Noticing devotees’ sanguine immunity to worries and capacity to cheerfully endure traumas that would overwhelm most people, James concluded that enthusiastic religion can make people “feelingless to evil” (James, 1902/1958, p. 92).

Consistent with the converts’ claims and James’s conclusion, expressions of idealistic conviction do make people less physiologically reactive to anxiety (Creswell et al., 2006). Expressions of religious belief also reduce ACC reactivity to conflict (Inzlicht & Tullet, in press). Moreover, approach motivation–related patterns of EEG activity ($r = -.53$; Nash et al., 2010) and religious conviction ($r = -.51$; Inzlicht et al., 2009) are similarly correlated

with neural response to conflict in the ACC. Our hypothesis that idealistic religious conviction is driven by RAM to quell anxious uncertainty is further suggested by past work showing that people who report feeling most anxious about the prospect of personal uncertainty get most angry when their religious convictions are maligned (Van den Bos, Van Ameidje, & Van Gorp, 2006; Yavuz & Van den Bos, 2009). The present research extends this work by directly investigating causes and catalysts of religious zeal.

The present research also extends other research on reactive religion that has tended to focus on how vulnerable predicaments can cause meek surrender to an externally controlling God (Kay, Gaucher, Napier, Callan, & Laurin, 2008; Kay, Moscovitch, & Laurin, in press; Laurin, Kay, & Moscovitch, 2008) or superstitious credulity, in general (Norenzayan & Hansen, 2006; Whitson & Galinsky, 2008). In contrast to this past emphasis, we specifically focus on a more militant and personally empowered form of zeal that seems closer to the kind of empowered motivation that may animate radical religious violence.

Three studies assess whether threats in agentic and communal domains that have each caused anxious uncertainty and RAM in past research (e.g., McGregor et al., 2010) will also cause idealistic religious extremes. Moreover, the present work assesses whether such reactive zeal will be most pronounced among participants with anxious and uncertainty-averse (Study 1) and approach-motivated (Study 2) personalities. The RAM hypothesis posits that reactive ideals heighten approach motivation, which serves to relieve uncertainty-related distress. Finding the most reactive religious idealism after anxious uncertainty threats and among the most uncertainty-averse and approach-motivated participants would provide convergent support for the RAM hypothesis.

Study 1 specifically tests the assumption that people will preferentially embrace the more idealistic aspects of religion as opposed to the merely superstitious in response to anxious uncertainty. Studies 2 and 3 further assess the extent to which reactive religious zeal applies even to the most jingoistic forms of religious zeal. Study 3 provides convergent support for the results of Studies 1 and 2 by using a relationship uncertainty threat instead of the academic uncertainty threat used in Studies 1 and 2. Study 3 also tests whether religious RAM will be strongest when avenues are blocked for goal pursuit in everyday life. We tested the moderational hypotheses in all three studies using moderated multiple regression analyses as recommended by Aiken and West (1991) and West, Aiken, and Krull (1996).¹

¹ For ease of computing the most informative simple effect and slope in each analysis, threat is dummy coded with the threat condition set to zero, and the moderator variable is centered at ± 1 standard deviation above or below the mean (i.e., at the valence expected to be most active). For the other simple effect and slope, the regression analysis is then repeated with the no-threat condition dummy coded as 0 and with the moderator variable centered at the other valence (i.e., at ± 1 standard deviation). West et al. (1996, p. 7) and Aiken and West (1991, pp. 102–105) advocated testing and interpreting first order, conditional effects in the presence of the higher order interaction term. They argued that doing so is more appropriate for the conditional hypotheses in experimental personality research than the traditional approach of testing main effects alone in a stepwise analysis.

Study 1

When vulnerable, people sometimes become more generally superstitious. For example, they see illusory patterns in random stimuli (Kay et al., 2008, Study 5; Whitson & Galinsky, 2008) and become more generally credulous, even of supernatural forces that are not meaningfully related to their own worldview ideals (Norenzayan & Hansen, 2006). In contrast, the present RAM hypothesis focuses specifically on idealistic religious extremes. Although religious belief systems often do involve superstitious elements, their core narratives endorse ideals of good and evil and the essence of human nature. Various threats may cause general superstition as a result of the heightened vigilance associated with anxious arousal (Gray & McNaughton, 2000); we expected religious RAM for only the more idealistic elements of religious conviction because of the link between ideals and approach motivation (Amodio et al., 2004; Higgins, 1997; McGregor, Gailliot, Vasquez, & Nash, 2007; McGregor et al., 2010).

Study 1 accordingly had two general aims. First, we assessed individual differences in anxiety and uncertainty aversion. Anxious uncertainty aversion is the state theoretically related to goal conflict that is specifically thought to arouse RAM (Marigold et al., 2010; McGregor, Prentice, & Nash, 2009). The goal regulation assumptions of the RAM model would be supported if effects were strongest for people with dispositional anxiety and aversion to uncertainty. Second, we measured strength of belief in religious ideals and a broad range of general superstitious and paranormal phenomena. Idealistic but not merely superstitious beliefs should be heightened by RAM processes (McGregor et al., 2010).

Method

Fifty-nine undergraduate psychology students (16 men; mean age = 19 years) participated over the Internet for partial course credit. They completed dispositional measures of anxious uncertainty aversion and then completed randomly assigned anxious uncertainty threat or no-threat materials. After a delay, they then rated their degree of belief in religious and superstitious phenomena. During the delay, participants were told to let their minds wander. In keeping with past research on uncertainty and mortality threats, the delay was included as required to allow distal, idealistic defenses to emerge (Pyszczynski, Greenberg, & Solomon, 1999; Wichman, Brunner, & Weary, 2006).

Anxious uncertainty aversion. Participants rated 15 uncertainty aversion items (from the Greco & Roger, 2001, Emotional Uncertainty subscale; e.g., "Facing uncertainty is a nerve-wracking experience") on a scale from 1 = *strongly disagree* to 5 = *strongly agree*. Uncertainty aversion has predicted sensitivity to threat (Greco & Roger, 2001) and emotional reactions to religious deviance (Van den Bos et al., 2006). Participants also rated themselves on a two-item Neuroticism Scale (Gosling, Rentfrow, & Swann, 2003) that assessed the extent to which they saw themselves as "anxious, easily upset" and "calm, emotionally stable" (reverse scored), rated on the same 1–5 scale as uncertainty aversion. Given the theoretical links between uncertainty aversion and anxiety (Gray & McNaughton, 2000), we expected a significant correlation between the two scales that would justify averaging them for a general dispositional measure of anxious uncertainty aversion.

Anxious uncertainty threat (achievement domain). After completing the personality scale measures, participants were ran-

domly assigned to either an anxious uncertainty threat or a no-threat control condition. The anxious uncertainty threat materials required participants to read for comprehension a graduate-level statistics passage that had been abbreviated to make it incomprehensible (adapted from McGregor et al., 2005). The no-threat control condition materials were similar but instead required participants to read for comprehension a relatively simple passage about statistics. In past research, this anxious uncertainty threat has specifically caused negative affect characteristic of goal conflict; idealistic conviction; and implicit, neural, and behavioral neuroscience evidence of RAM (McGregor et al., 2005, 2010; McGregor, Haji, Nash, & Teper, 2008; McGregor, Nash, & Inzlicht, 2009).

Religious Idealism and Superstition Scales. For the main dependent variable, participants rated their agreement (from 1 = *strongly disagree* to 7 = *strongly agree*) with four core religious ideals shared by many religious traditions: "The soul continues to exist though the body may die"; "There is an evil supernatural force in the world, e.g., a devil"; "I believe in God"; and "There is supernatural justice for evil and reward for good, e.g., heaven and hell." We averaged ratings on these four items for our Religious Idealism subscale. In past research, these four items formed a distinct factor in the Paranormal Beliefs Scale (Tobacyk & Milford, 1983) apart from the more generally superstitious factors related to the Psi Beliefs (four items, e.g., psychokinesis and mind reading), Spiritualism (four items, e.g., communication with the dead and spirit leaving the body), Witchcraft (four items, e.g., witches, voodoo, and black magic), Extraordinary Life Forms (three items, e.g., Loch Ness Monster and bigfoot), and Precognition (three items, e.g., predicting the future with dreams or otherwise) subscales. For comparison, we assessed these other five subscales from the Paranormal Belief Scale, along with an additional 30-item Superstition Scale that focused on general superstitions related to astrology, omens, and luck (adapted from Frost et al., 1993).

Results and Discussion

As expected, the Uncertainty Aversion Scale ($\alpha = .89$) and the two-item neuroticism index (item $r = .25$) were significantly correlated, $r(59) = .43, p < .001$, and were averaged for our index of anxious uncertainty aversion. Correlations among the personality and superstition subscales are presented in Table 1.

For the main analysis, we regressed Religious Idealism ($\alpha = .84$) on dummy-coded anxious uncertainty threat (with threat condition coded as zero), anxious uncertainty aversion (centered at 1 standard deviation), and the Anxious Uncertainty Threat \times Anxious Uncertainty Aversion interaction term. A significant interaction emerged, $\beta = -.65, t(58) = 2.85, p = .006, \Delta R^2 = .13$ (see Figure 1). The simple effect and simple slope analyses most relevant to the RAM hypothesis revealed that (a) at high anxious uncertainty aversion, Religious Idealism was significantly higher in the threat condition, $y' = 5.54$, than in the no-threat control condition, $y' = 4.22, \beta = -.39, t(58) = -2.12, p = .04$; (b) in the threat condition, Religious Idealism was significantly higher at high anxious uncertainty aversion, $y' = 5.54$, than at low anxious

Table 1
Pearson Correlations in Study 1

| Subscale | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----------------------------|--------|-------|--------|--------|--------|--------|--------|------|---|
| 1. Uncertainty aversion | — | | | | | | | | |
| 2. Neuroticism | .43*** | — | | | | | | | |
| 3. Religious Idealism | .08 | .03 | — | | | | | | |
| 4. Spiritualism | .35* | .31* | .40** | — | | | | | |
| 5. Precognition | .38** | .34** | .42*** | .65*** | — | | | | |
| 6. Witchcraft | .12 | .28* | .38** | .68*** | .50*** | — | | | |
| 7. PSI Beliefs | .24 | .36** | .23 | .68*** | .62*** | .72*** | — | | |
| 8. Extraordinary Life Forms | -.05 | .07 | .20 | .35** | .11 | .54*** | .38** | — | |
| 9. Superstition | .39** | .24 | .25 | .53*** | .44*** | .53*** | .58*** | .26* | — |

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

uncertainty aversion, $y' = 3.84$, $\beta = .46$, $t(58) = 2.51$, $p = .02$.² These results indicate that the anxious uncertainty threat heightened religious idealism specifically among participants dispositionally high on anxious uncertainty aversion and that in the threat condition, anxious uncertainty aversion predicted religious idealism.

We repeated the above regression analyses six times more, substituting first the Superstition Scale ($\alpha = .96$) and then each of the five more general superstition subscales of the Paranormal Beliefs Scale (i.e., PSI Beliefs, Precognition, Witchcraft, Extraordinary Life Forms, and Spiritualism, α s between .78 and .84). We did this to rule out the possibility that reactive religious idealism might simply reflect a more generalized reactive tendency toward credulous superstition. In these additional analyses, the Anxious Uncertainty Threat \times Anxious Uncertainty Aversion interaction effects were all nonsignificant ($ps > .05$) except on the Spiritualism subscale, $\beta = -.44$, $t(58) = 2.09$, $p = .04$, $\Delta R^2 = .06$ (see Table 2 for the betas and p values for the interaction effects on the subscales and the Superstition Scale). The Spiritualism subscale items were “Your mind or soul can leave your body and travel”; “During altered states, such as sleep or trances, the spirit can leave the body”; “Reincarnation does occur”; and “It is possible to communicate with the dead.” The relatively weak but significant effect on the Spiritualism subscale may reflect its partially idealistic nature. Reincarnation implies a principle of justice and spirit is often considered the ideal human essence. Indeed, when the Religious Idealism subscale was included as a covariate, the interaction effect on the Spiritualism subscale became nonsignificant ($p = .29$).³

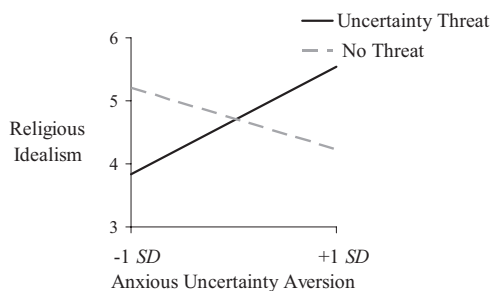


Figure 1. Religious idealism as a function of anxious uncertainty aversion and anxious uncertainty threat.

Other evidence that religious idealism is reactively engaged above and beyond the tendency to endorse mere superstition comes from an analysis with the Superstition scale and the five more general superstition subscales of the Paranormal Beliefs Scale statistically controlled. The Anxious Uncertainty Aversion \times Uncertainty Threat effect on religious idealism remained significant, $\beta = .26$, $t(49) = 2.15$, $p = .04$, as did the simple effect most diagnostic of RAM—threat at high anxious uncertainty aversion, $\beta = .34$, $t(49) = 1.98$, $p = .05$. Thus, even after controlling for superstition, reactive religious idealism remained.

A possible critique of this interpretation might arise from the extent to which the various subscales differentially reflect normative versus eccentric beliefs. It could be argued that participants are reactively turning to the Religious Idealism subscale not because of its focus on ideals but simply because it is less eccentric and easier to endorse than the other subscales. Indeed, as shown in Table 2, most of the merely superstitious subscales were more farfetched and lower in participant endorsement than the Religious Idealism subscale. The Witchcraft, Extraordinary Life Forms, and PSI Beliefs subscales, for example, had the lowest mean scores (each below 3 on the 7-point scale) and also showed no evidence of reactive zeal (interaction $|t| < 1$).

Differential effects on the Precognition, Spiritualism, and Religious Idealism subscales, however, are not consistent with the “less eccentric” explanation for why people specifically react with religious idealism and spiritualism. In the no-threat condition, the combined mean of the Religious Idealism and Spiritualism subscale items was the same as the mean of the Precognition subscale

² The other two simple effect and slope analyses from a regression analysis recomputed with the control condition dummy coded as zero and the distribution of anxious uncertainty aversion centered at -1 standard deviation were as follows: At low anxious uncertainty aversion, religious idealism was lower in the threat condition, $y' = 3.87$, than in the no-threat control condition, $y' = 5.12$, $\beta = -.41$, $t(58) = -2.13$, $p = .04$, which would appear to reflect a nondefensive assimilation to the uncertainty prime. In the no-threat control condition, religious idealism did not differ significantly between high anxious uncertainty aversion, $y' = 4.25$, and low anxious uncertainty aversion, $y' = 5.12$, $\beta = -.26$, $t(58) = -1.50$, $p = .14$.

³ The independence of the ideal soul from the phenomenal body is a basic assumption of Eastern philosophy and a prototypical example of idealism presented in Plato's *Republic*. Greek idealism formatively influenced the evolution of Judaism, Christianity, and Islam (Tarnas, 1991).

Table 2
Betas and p Values for the Anxious Uncertainty Aversion × Threat Effects on the Superstition Scale and the Subscales of the Paranormal Beliefs Scale

| Subscale | <i>M</i> | <i>SD</i> | β | <i>t</i> | <i>p</i> |
|---------------------------|----------|-----------|---------|----------|----------|
| Religious Idealism | 4.70 | 1.62 | -.65 | 2.85 | .006 |
| Precognition | 4.32 | 1.59 | -.40 | 1.90 | .06 |
| Spiritualism | 3.42 | 1.43 | -.44 | 2.09 | .04 |
| Psi Beliefs | 3.10 | 1.34 | -.23 | 1.03 | .31 |
| Superstition ^a | 3.04 | | -.26 | 1.20 | .24 |
| Witchcraft | 2.76 | 1.31 | -.11 | 0.45 | .65 |
| Extraordinary Life Forms | 2.31 | 1.26 | -.08 | 0.33 | .75 |

^a The actual mean was 2.17 (*SD* = 0.80) on a 1–5 scale. We multiplied the mean by 7/5 for comparability with the other six means, which were rated on a 1–7 scale.

(*M* = 4.20). Despite this equal endorsement, however, participants high in anxious uncertainty aversion reacted to threat with only a marginal increase in Precognition subscale score (*p* = .06) that was completely eliminated (i.e., to *p* = .42) when the Religious Idealism subscale score was included as a covariate. Thus, religious idealism, not general credulity, appears to account for the effects of Study 1. The results of Study 1 support a RAM view of religious conviction in two ways. They distinguish reactive religious idealism from superstition and they demonstrate the catalyzing role of anxious uncertainty aversion.

Study 2

In Study 2, we tested whether dispositional measures related to approach motivation would moderate religious RAM for self-identified religious orientations.

Method

Ninety-six undergraduate psychology students (21 men; mean age = 22 years) participated over the Internet in exchange for course credit (data from 16 others who spent less than 15 min on the materials were discarded because it would have been impossible for them to follow the instructions in such a short time). Participants first completed four personality scales with theoretical and empirical links to approach motivation (McGregor et al., 2007): Promotion Focus (Lockwood, Jordan, & Kunda, 2002), Behavioral Activation (Carver & White, 1994), Action Control (Kuhl, 1994), and Self-Esteem (Rosenberg, 1965). Next, participants completed randomly assigned threat materials, followed by a 3-min, free-thought delay to allow for idealistic defenses to emerge (as in Study 1). For the dependent variable, participants selected the religious belief system they most identified with and then responded to the Religious Zeal Scale (from McGregor et al., 2008).

Personality scales related to approach motivation.

Promotion focus. Participants completed the Promotion Focus subscale of the Regulatory Focus Scale (Lockwood et al., 2002). Participants indicated, on a scale from 1 = *not at all true of me* to 4 = *very true of me*, the extent to which they typically focused on eagerly pursuing success. Promotion Focus subscale items include “I am focused on the success I hope to achieve” and

“I see myself as primarily striving to reach my ideal performance.” Promotion focus is theoretically linked to approach motivation (Higgins, 1997) and is associated with the same patterns of brain activation as approach motivation (i.e., left frontal activation; Amodio et al., 2004; Harmon-Jones & Allen, 1997).

Behavioral Activation System, Drive subscale (BAS-Drive).

The BAS (Carver & White, 1994) assesses activity of the motivational system responsible for sensitivity to reward, approach motivation, and positive affect (cf. Gray & McNaughton, 2000). We used the BAS subscale with the clearest face-valid link to general approach motivation—BAS-Drive. One of the four items is “If I see a chance to get something I want, I move on it right away.” All items were answered on a 5-point scale from 1 = *strongly disagree* to 5 = *strongly agree*.

Action control. We assessed the two facets (recommended by J. Kuhl, personal communication, January 2006) of the Action Control Scale (ACS-90; Kuhl, 1994) that measure the tendency for people to be action oriented and not state oriented in challenging situations. The Action-Oriented scale items assess the basic premise of RAM. When the going gets tough, action-oriented people get going and move on to other goals rather than remaining distressed. State-oriented people, in contrast, stay vigilantly preoccupied with worrisome thoughts when difficulties emerge. The 12 items of the failure facet of the ACS-90 assess the extent to which people focus on constructive action instead of ruminative preoccupation after failure. The 12 items of the decision facet of the ACS-90 assess the extent to which people focus on constructive action instead of hesitation when faced with decisions.

For each item, participants are required to choose between two alternative responses that represent either the tendency to move on and move forward or the tendency to remain distressed and inactive. For example, one item begins with the stem “When I am told that my work has been completely unsatisfactory” and provides the response options “I don’t let it bother me for too long” and “I feel paralyzed.” Another item begins with the stem “When something is very important to me, but I can’t seem to get it right,” and provides response options “I just forget about it and go do something else” and “I gradually lose heart.” Active responses were given a value of 2, whereas hesitant responses were given a value of 1. An overall action control score was computed as the mean of the 24 items assessed. Higher scores indicate an action-oriented tendency to engage alternative goals when faced with goal conflicts and uncertainties.

Self-esteem. We assessed self-esteem with the 10-item Rosenberg (1965) Self-Esteem Scale. Items include “On the whole, I am satisfied with myself,” and “At times, I think I am no good at all” (reverse scored). Participants rated their agreement with each item using a scale from 1 = *strongly disagree* to 5 = *strongly agree*. High self-esteem has moderated extreme and ideological conviction reactions to uncertainty and mortality salience threats in past research (McGregor & Marigold, 2003; McGregor et al., 2005, 2007) and is theoretically and empirically linked to approach motivation (Heimpel, Elliot, & Wood, 2006; Leonardelli, Lakin, & Arkin, 2007; McGregor et al., 2007).

Anxious uncertainty threat (academic domain). The anxious uncertainty threat manipulation was the same as in Study 1.

Religious Zeal Scale. Participants first indicated which of the following religious belief systems they most identified with: Jewish, Christian, Muslim, Sikh, Hindu, Buddhist, atheist, agnostic, or

other. They then rated the following eight Religious Zeal Scale items on a scale from 1 = *strongly disagree* to 5 = *strongly agree*. We computed Religious Zeal Scale scores by averaging the participants' responses.

1. I am confident in my religious beliefs.
2. I aspire to live and act according to my religious beliefs.
3. My religious beliefs are grounded in objective truth.
4. Most people would agree with my religious belief system if they took the time to understand it rather than just relying on stereotypes about it.
5. If my religious beliefs were being publicly criticized I would argue to defend them.
6. I would support a war that defended my religious beliefs.
7. If I really had to, I would give my life for my religious beliefs.
8. In my heart I believe that my religious beliefs are more correct than others'.

Results

Religious identifications were 3% Jewish, 42% Christian, 10% Muslim, 7% Sikh, 6% Hindu, 4% Buddhist, 5% atheist, 5% agnostic, and 17% other. The Religious Zeal Scale had an alpha reliability of .88. Alpha reliabilities of the Promotion Focus, BAS-Drive, Action Control, and Self-Esteem Scales were between .78 and .89.

Main analysis. Given the intercorrelations among the approach disposition moderator variables (see Table 3) and their similar Disposition × Threat interaction effects on religious zeal,⁴ we averaged participants' scores on the four dispositions to create an approach disposition composite (with a four-item α reliability = .65). We regressed religious zeal on anxious uncertainty threat (with threat condition coded as 0), approach disposition composite (centered at 1 standard deviation), and the Threat × Approach Disposition composite interaction term. There was a significant interaction effect on religious zeal, $\beta = -.55$, $t(92) = -2.89$, $p < .005$, $\Delta R^2 = .09$ (see Figure 2).

Table 3
Pearson Correlations in Study 2

| Subscale | 1 | 2 | 3 | 4 | 5 |
|--------------------|------|--------|--------|------|---|
| 1. Religious Zeal | — | | | | |
| 2. Promotion Focus | .01 | — | | | |
| 3. Self-Esteem | .13 | .33*** | — | | |
| 4. Action Control | -.05 | .09 | .42*** | — | |
| 5. BAS-Drive | -.02 | .46*** | .49*** | .20* | — |

Note. Means and standard deviations were as follows: For Religious Zeal, $M = 3.12$, $SD = 0.80$; for Promotion Focus, $M = 3.55$, $SD = 0.38$; for Self-Esteem, $M = 3.87$, $SD = 0.66$; for Action Control, $M = 1.5$, $SD = 0.21$; for BAS-Drive, $M = 3.43$, $SD = 0.70$.

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

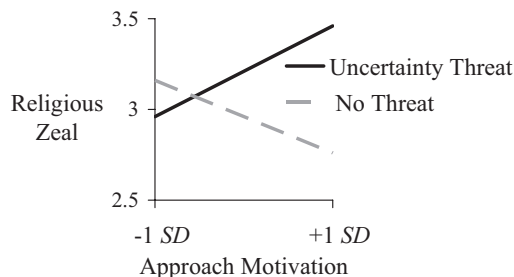


Figure 2. Religious Zeal as a Function of Approach Motivation and Anxious Uncertainty Threat.

The simple effect and simple slope analyses most relevant to the RAM hypothesis revealed that (a) at high approach disposition, religious zeal was significantly higher in the threat condition, $y' = 3.46$, than in the no-threat control condition, $y' = 2.76$, $\beta = -.44$, $t(92) = -3.14$, $p = .002$; and (b) in the threat condition, religious zeal was significantly higher at high approach disposition, $y' = 3.46$, than at low approach disposition, $y' = 2.93$, $\beta = .33$, $t(92) = 2.20$, $p = .03$.⁵ These results demonstrate that dispositional approach motivation inclines people toward reactive religious zeal in the face of anxious uncertainty.

Theistic orientation. Auxiliary analyses found the significant interaction effect to hold for both the 60 participants with more theistic belief systems (Jewish, Christian, Muslim, Sikh), $\beta = -.63$, $t(56) = -2.50$, $p = .02$, and among the 36 with less theistic beliefs (Hindu, Buddhist, atheist, agnostic, other), $\beta = -.73$, $t(32) = -2.51$, $p = .02$. It should be noted, however, that overall, theistic participants were significantly higher in religious zeal ($M = 3.28$) than were the less theistic participants ($M = 2.85$), $p < .05$. Thus, the reactive surge in religious zeal among theistic participants may be more consequential.

Exploratory Religious Zeal Scale item analyses. Exploratory item-level analyses in Study 2 further inform the nature of the reactive religious zeal effect. Interaction effects attained or

⁴ In four analyses regressing religious zeal onto each individual approach disposition, anxious uncertainty threat, and the individual Approach Disposition × Threat interaction term, there was an interaction effect that at least approached significance: with Promotion Focus, $t(92) = 1.71$, $p < .10$; with BAS-Drive, $t(92) = 2.15$, $p < .05$; with Action Control, $t(92) = 2.15$, $p < .05$; and with Self-Esteem, $t(92) = 2.10$, $p < .05$. The graphs had similar patterns in all cases with highest religious zeal at high individual approach disposition in the threat condition. The simple effect and simple slope of most relevance to the RAM hypothesis (i.e., the simple effect of threat at high approach disposition and the simple slope of approach disposition in the threat condition) had p value significance levels as follows, respectively: Promotion Focus, .02, .23; BAS-Drive, .01, .20; Action Control, .01, .23; and Self-Esteem, .02, .02.

⁵ The other two simple effect and slope analyses from a regression analysis recomputed with the no-threat control condition dummy coded as zero and the distribution of approach disposition centered at -1 standard deviation were as follows: At low approach disposition, religious zeal did not differ between the uncertainty threat condition, $y' = 2.93$ and the no-threat control condition, $y' = 3.16$, $\beta = -.14$, $t(92) = -1.00$, $p = .32$. In the no-threat control condition, religious zeal was marginally lower at high approach disposition, $y' = 2.76$, than at low approach disposition, $y' = 3.16$, $\beta = -.25$, $t(92) = -1.88$, $p = .06$.

approached significance (with highest religious zeal at high approach disposition in the threat condition) on seven of the eight Religious Zeal Scale items. The three most seemingly extreme and jingoistic items—about supporting war, dying, and claiming superiority for one's own belief system—were all at least marginally predicted by the interaction effect ($ps = .08, .008, \text{ and } .07$, respectively), particularly among theistic participants ($ps = .07, .01, \text{ and } .04$, respectively) but not among the less theistic participants ($ps = .39, .12, \text{ and } .27$, respectively). Study 3 returns to the question of whether the more theistic participants may be particularly reactive.

Discussion

Studies 1 and 2 provide converging personality moderation evidence for idealistic religious RAM. The empowered nature of the moderator variables and Religious Zeal Scale items in Study 2 suggest that reactive religious zeal may be more than humble deference to an externally controlling God or susceptibility to spooky supernatural thoughts. Study 3 further probes the empowered religious RAM hypothesis by augmenting the Religious Zeal Scale with more muscular and jingoistic items.

Study 3

For multimethod convergence, we used a threat in the domain of personal relationships that, as with the academic threat used in Studies 1 and 2, has specifically aroused uncertainty-related distress, caused compensatory conviction for nonreligious opinions, and caused explicit and implicit evidence of RAM in past research (McGregor & Marigold, 2003; McGregor et al., 2010). We also augmented the Religious Zeal Scale from Study 2 in an attempt to more clearly show that people are drawn to jingoistic religious zeal in the face of anxious uncertainty.

Two additional new items that measure deference to a controlling God were also included to help distinguish our religious RAM effect from other religious impulses that might reflect meeker forms of religious devotion. Anxiety-provoking threats sometimes cause people to exaggerate their submission to externally controlling forces, but we expected a more empowered religious RAM effect to be distinct from external control effects (cf. Kay et al., 2008).

Finally, Study 3 tested an additional hypothesis related to how reactive religious zeal might be ameliorated. At least since the Enlightenment, secular humanists have been hoping to supplant the sometimes cruel and dogmatic extremes of religious zeal with determined commitment to important humanistic goals in the temporal world. The argument has been that if people could be empowered in their pursuit of engaging temporal goals in the here and now, then extreme devotion to transcendent causes would become less appealing. International aid is often funneled to regions at risk for ideological extremism in hopes that improved infrastructure for temporal goals might relieve the motivation for militant idealism. The basic goal-regulation assumption remains untested, however, and has been criticized by conservative political commentators as naive (e.g., Timmerman, 2003). In Study 3, we measured participants' feelings of empowered engagement in the temporal goals that characterize their everyday lives. We reasoned that reactive religious zeal would be lowest among participants most engaged in their temporal goals because their active

approach motivation would confer resilience in the face of anxious uncertainty (Nash et al., 2010).

Method

One hundred twenty introductory psychology students (22 men; mean age = 19 years) participated over the Internet in exchange for course credit. The randomly assigned anxious uncertainty threat or no-threat control condition materials were followed by a 3-min free-thought delay as in Studies 1 and 2. For the dependent variables, participants completed all of the items from the Religious Zeal Scale used in Study 2, plus eight additional religious zeal items to more reliably tap the more muscular aspects of zeal, as well as two new God in Control items to assess meek deference to an externally controlling God.

Anxious uncertainty threat (relationship domain). Each participant randomly assigned to the threat condition identified a troubled relationship in his or her life that was not currently going very well and responded to two prompts: "Describe the kinds of problems and difficulties you are having with this person" and "Describe your thoughts and feelings regarding the possibility of this relationship continuing to go poorly or perhaps even getting worse." Each prompt was presented separately on the computer screen and 2 min were allocated for each answer. Participants in the no-threat condition responded to similar prompts about a friend's relationship. In past research, this threat manipulation has caused RAM and anxious uncertainty but not generalized negative affect (McGregor & Marigold, 2003, Study 3; McGregor et al., 2010).

Augmented Religious Zeal Scale and Integrity, Extremism, and Jingoism subscales. As in Study 2, participants first indicated which religious belief system they most identified with and then rated 16 items on the Augmented Religious Zeal Scale using the same 5-point scale as in Study 2 (1 = *strongly disagree*, 5 = *strongly agree*). Items preceded by an asterisk are from the original Religious Zeal scale.

Religious Integrity subscale. We averaged five relatively benign items for a Religious Integrity subscale.

- *1. I am confident in my religious beliefs.
- *2. I aspire to live and act according to my religious beliefs.
- *3. My religious beliefs are grounded in objective truth.
- *4. Most people would agree with my religious belief system if they took the time to understand it rather than just relying on stereotypes about it.
- *5. If my religious beliefs were being publicly criticized I would argue to defend them.

Religious Extremism subscale. We averaged three items assessing openness to extreme action for a Religious Extremism subscale.

- *6. I would support a war that defended my religious beliefs.

- *7. If I really had to, I would give my life for my religious beliefs.
8. I will do whatever is necessary to help my religious beliefs prosper in society.

Religious Jingoism subscale. We averaged eight items referring to seeing one's own view as more correct than others' for an index of religious jingoism.

- *9. In my heart I believe that my religious beliefs are more correct than others'.
10. It is wise to keep a wary distance from people who distract me from living according to my religious beliefs.
11. In the end, those who oppress my religious beliefs will suffer for their ignorance.
12. If everyone followed my religious beliefs, the world would be a much better place.
13. Harmful misinformation is too often spread about my religious beliefs by ignorant people.
14. If I really had to, I would endure much pain and suffering to stay true to my religious beliefs.
15. Today's society is in desperate need of the wisdom of my religious beliefs.
16. My strongest relationships are with those who have the same religious beliefs as I do.

We expected threatened participants to be drawn to these Religious Jingoism subscale items given links between reactive approach motivation and idealism, risk taking, and hostility (Carver & Harmon-Jones, 2009; Cavallo, Fitzsimons, & Holmes, 2009; Gianotti et al., 2009; McGregor et al., 2007, 2010). In the data analyses for Study 3, we assess overall religious zeal on the augmented 16-item scale, as well as finer grained analyses of the Religious Integrity, Religious Extremism, and Religious Jingoism subscales.

God in Control items. None of the items on the Augmented Religious Zeal Scale mentioned God. Rather, they ask participants to describe zeal for their self-identified religious belief system. For a specific measure of deference to an externally controlling God, we averaged the following two items to create a God in Control index.

*I believe that a powerful God or Godlike force shapes human destiny.

*Most important events in our world are guided by, and to some extent controlled by, the will of God or a Godlike force.

Past research has found that anxiety-inducing threats can heighten conviction that powerful external gods are in control (Kay et al., 2008). Such meek surrender to a controlling God seems distinct from the more muscular religious RAM described by

James (1902/1958) and the more jingoistic of the Augmented Religious Zeal Scale items, however. We accordingly did not expect responses on the God in Control index to mirror participants' Augmented Religious Zeal Scale item responses.

Empowered temporal goal engagement: A moderator variable. After assessing the Augmented Religious Zeal Scale and God in Control index, participants completed an adapted Personal Projects Analysis (Little, 1983, 1993) assessment of the extent to which their everyday personal goals felt empowered. Participants were first given 2 min to list all of the current personal projects in their lives that they could think of. They then selected the four projects that were most self-characteristic and rated each on a scale from 0 = *not at all* to 10 = *extremely* on three dimensions related to empowered engagement in temporal goals: *determination* ("How firmly determined are you to engage in this goal, even if it requires sacrifices?"), *personal control* ("To what extent do you feel in control of how this goal turns out?"), and *importance* ("How important does this goal seem to you, as compared to other people's typical goals?").⁶

Because of the theoretical convergence of these dimensions on empowered engagement (Galinsky, Guenfeld, & Magee, 2003; Guinote, 2007; Keltner et al., 2003), we expected them to be intercorrelated and to form a reliable index. Participants highest in empowered temporal goal engagement should be least inclined toward reactive religious zeal. They should be resilient and non-defensive in the face of anxious experience because of the immunity conferred by their active approach motivation. In contrast, less engaged participants should be less able to tolerate the anxious uncertainty imposed by the experimental manipulation.

Anxious uncertainty manipulation check. At the end of the study, participants recalled the experimental materials and rated the extent to which they had made them feel uncertain and frustrated. These two emotions are closely linked to goal conflict and are the most reliable indices of anxious uncertainty that participants have reported in response to anxious uncertainty threats (McGregor et al., 2010). The two items were averaged for an anxious uncertainty manipulation check. Whereas the goal-engaged and therefore nondefensive participants were expected to acknowledge the anxious uncertainty, the less engaged and therefore more vulnerable participants were expected to deny it.

Results

Preliminary analyses. Of the participants, 58% were Christian, 12% were Muslim, 8% were Hindu, 4% were atheist, 3% were Jewish, 3% were agnostic, 3% were Buddhist, 0% were Sikh, and 8% responded "other." As predicted, scores on the 16-item Augmented Religious Zeal Scale ($\alpha = .93$) were significantly higher in the anxious uncertainty threat condition ($M = 3.22$) than in the no-threat control condition ($M = 2.89$), $\beta = .22$, $t(118) = 2.41$, $p = .02$.

Results of a principal components analysis were consistent with our view of the first five items as reflecting a less jingoistic and extreme variety of religious zeal than the last 11 items. The last 11 but none of the first five items had loadings greater than .40 on the first of two varimax-rotated factors that emerged with eigenvalues

⁶ Twelve other dimensions were also assessed to test hypotheses not focal to the present investigation.

greater than 1. In contrast, the first five but none of the last 11 items had loadings greater than .40 on the second factor. On the basis of this clear structure, we created a Religious Integrity subscale by averaging Items 1–5. The three of the last 11 items referring to religious warfare, dying, and doing whatever is necessary to promote one’s religious views were averaged for a Religious Extremism subscale. The remaining eight items, referring to superiority of one’s own religious views over others’, were averaged for a Religious Jingoism subscale.

Religious Zeal subscales. Scores on the five-item Religious Integrity subscale ($\alpha = .86$) were significantly higher in the anxious uncertainty threat condition ($M = 3.62$) than in the no-threat control condition ($M = 3.33$), $\beta = .18$, $t(118) = 1.97$, $p = .05$. Scores on the three-item Religious Extremism subscale ($\alpha = .75$) were significantly higher in the anxious uncertainty threat condition ($M = 2.96$) than in the no-threat control condition ($M = 2.53$), $\beta = .23$, $t(118) = 2.59$, $p = .01$. Scores on the eight-item Religious Jingoism subscale ($\alpha = .92$) were also significantly higher in the anxious uncertainty threat condition ($M = 3.07$) than in the no-threat control condition ($M = 2.76$), $\beta = .19$, $t(118) = 2.07$, $p = .04$. These results indicate that reactive religious zeal is at least as strong for the extreme and jingoistic aspects as for the more benign aspects.

Theistic orientation. Separate analyses among theistically oriented (Jewish, Christian, and Muslim) and less theistically orientated (Hindu, Buddhist, atheist, agnostic, other) participants revealed some evidence for reactive religious zeal among both belief orientations. Specifically, among theistic participants, the threat effect on Religious Integrity was nonsignificant, $|t| < 1$, but the threat effect on Religious Jingoism approached significance, $\beta = .20$, $t(86) = 1.89$, $p = .06$, and the threat effect on Religious Extremism was significant, $\beta = .22$, $t(86) = 2.12$, $p = .04$.

Among the smaller sample of less theistic participants, the threat effect on Religious Integrity was significant, $\beta = .52$, $t(30) = 3.31$, $p = .002$. The threat effect on Religious Jingoism was nonsignificant, $\beta = .24$, $t(30) = 1.44$, $p = .16$, but the threat effect on Religious Extremism was significant, $\beta = .36$, $t(30) = 2.12$, $p = .04$. Means in the threat and no-threat control conditions on the Augmented Religious Zeal Scale and on the subscales are presented in Table 4.

Moreover, as shown in Table 4 and consistent with findings from Study 2, theistic participants had significantly higher zeal than the less theistic participants on the Augmented Religious Zeal

Scale and on all the subscales. Thus, even though reactive religious extremes are ubiquitous, they may grow particularly extreme when rooted in the exclusive truth claims of monotheistic traditions.

Is religious zeal distinct from belief in an externally controlling God? Results of further analyses with the God in Control index are consistent with the claim that the religious RAM in the present research does not reflect submission to the will of an externally controlling God. For the God in Control index analyses, we excluded the nine atheists and agnostics because both God in Control items explicitly mention God. Results revealed no effect of threat on the God in Control index, $|t| < 1$. This finding helps further define the boundaries of religious RAM. Idealistic and jingoistic extremes are heightened, but humble submission to an externally controlling God is not. This finding is consistent with the RAM view that reactive religious zeal arises from eager approach of ideals in the face of threat.

Might empowered temporal goal engagement be an antidote to religious RAM? We assessed the extent to which religious RAM might depend on empowered temporal goal engagement in daily goals ($\alpha = .76$, $M = 5.31$, $SD = 0.75$). Empowered temporal goal engagement was not significantly correlated with overall zeal (absolute correlations with the scale and all subscales $< .07$, $ps > .40$), nor was it affected by threat ($|t| < 1$, presumably because any RAM impulse would have already been channeled toward religious zeal by the time personal projects were assessed). Confident in assuming the independence of goal ratings from threat-induced RAM processes, then, we regressed Augmented Religious Zeal Scale scores onto empowered temporal goal engagement (centered at -1 standard deviation), dummy coded threat (with threat condition coded 0), and the Engagement \times Threat interaction term.

As shown in Figure 3, there was a significant interaction effect, $\beta = .29$, $t(116) = 2.01$, $p < .05$, $\Delta R^2 = .03$. At low engagement, the simple effect of threat (dummy coded as 0) revealed significantly higher levels of religious zeal in the threat condition, $y' = 3.37$, than in the no-threat condition, $y' = 2.76$, $\beta = -.40$, $t(116) = -3.5$, $p = .002$. This reactive religious zeal effect was not apparent at high levels of engagement, however, where middling levels of religious zeal remained unaffected by the threat manipulation (i.e., $y' = 3.09$ as compared with $y' = 3.04$ in the control condition; this other simple effect and the two simple slopes were all nonsignificant, with $ps > .10$).

Is religious RAM a defense against anxious uncertainty? We averaged the significantly correlated “uncertain” and “frustrated” manipulation check items, $r(120) = .54$, $p < .001$, for an index of goal-related anxious uncertainty ($M = 2.59$, $SD = 1.11$). Given their resilience in the face of anxious predicaments, highly engaged participants should be able to mindfully acknowledge anxious uncertainty without resorting to defensive tactics. We regressed this Anxious Uncertainty index on Empowered Temporal Goal Engagement (centered at $+1$ standard deviation), dummy coded threat (with the threat condition coded as 0), and the Engagement \times Threat interaction term. As illustrated in Figure 4, there was a significant interaction effect, $\beta = -.34$, $t(116) = -2.30$, $p = .02$, $\Delta R^2 = .05$. At high engagement, the simple effect of threat revealed significantly higher anxious uncertainty in the threat condition, $y' = 2.81$, than in the no-threat condition, $y' = 2.23$, $\beta = -.26$, $t(116) = -2.01$, $p < .05$. This simple effect serves as a manipulation check that the anxious uncertainty threat does indeed induce anxious uncertainty among nondefensive par-

Table 4
Means in Study 3

| Scale | Overall | Threat | No threat | Theistic | Less theistic |
|----------------|---------|--------|-----------|----------|---------------|
| Augmented Zeal | 3.06 | 3.22* | 2.89 | 3.20*** | 2.67 |
| Integrity | 3.48 | 3.62* | 3.33 | 3.58* | 3.21 |
| Jingoism | 2.91 | 3.07* | 2.76 | 3.08*** | 2.47 |
| Extremism | 2.74 | 2.96** | 2.53 | 2.91*** | 2.28 |
| God in Control | 3.50 | 3.52 | 3.49 | 3.77*** | 2.78 |

Note. Asterisks represent statistical significance of comparisons between the threat and no threat conditions, and between theistic and less theistic participants. Standard deviations of the scales from first in the list to last were 0.77, 0.82, 0.85, 0.94, and 1.14.
* $p < .05$. ** $p < .01$. *** $p < .001$.

ticipants. This simple effect was not apparent at low engagement, however, where there was nonsignificantly ($p > .20$) less anxious uncertainty reported after the threat manipulation (i.e., $y' = 2.46$ as compared with $y' = 2.82$ in the control condition).⁷ In combination, the defensive and anxious uncertainty findings suggest that anxious uncertainty is more tolerable and less of a trigger for defensive religious reactions to the extent that people feel powerfully engaged in their everyday goals. Engaged participants were more able to acknowledge the anxious uncertainty raised by the anxious uncertainty threat and less inclined to respond defensively with religious RAM.

General Discussion

God is our refuge and strength.—Psalms 46:1 (King James Version)

Three studies support the religious RAM hypothesis. The same threats that have caused anxious uncertainty and RAM in past research (e.g., McGregor et al., 2010) heightened idealistic and extreme religious zeal, particularly among uncertainty-averse (Study 1) and approach-motivated (Study 2) participants. Effects held for both theistic and less theistic religious orientations and held for RAM-related zeal but not for submission to an externally controlling God (Study 3).

It may seem counterintuitive that anxious uncertainty would cause such bold zeal. Simple assimilation would predict that anxious uncertainty should cause less confidence, not more. According to the RAM view of religious zeal, however, vigilant anxiety can be relieved by unequivocal engagement in idealistically activated approach motivation (McGregor et al., 2010). The findings that both anxiety-averse and approach-motivated individuals were especially likely to turn to their religious ideals when faced with anxious uncertainties provide convergent dispositional support for the RAM and religious RAM hypotheses.

Personally empowered RAM contrasts with effects in past research revealing a meeker tendency to endorse external agencies and external meanings when bewildered by anxious or low power predicaments (Kay et al., 2008; Norenzayan & Hansen, 2006; Whitson & Galinsky, 2008). There was no effect of our manipulation on meek deference to an externally controlling God in Study 3. Thus, meek and muscular religious reactions may reflect two distinct routes to religious conviction for peace of mind (Inzlicht et al., 2009) as championed in religious expressions that refer in various ways to God as refuge and strength. The present religious zeal results reflect the more muscular route.

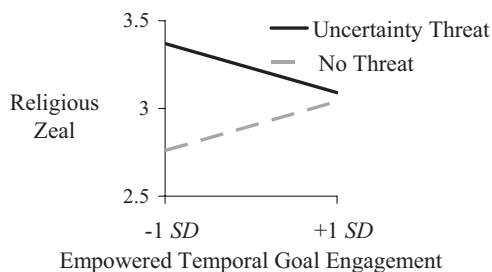


Figure 3. Religious zeal as a function of empowered temporal goal engagement and anxious uncertainty threat.

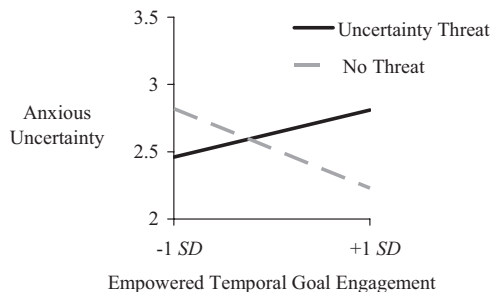


Figure 4. Anxious uncertainty as a function of empowered temporal goal engagement and anxious uncertainty threat.

The RAM understanding of religious zeal is important for secular-religious dialogue because it illuminates the mechanics of faith beyond its secular stereotype as silly superstition (cf. Harris, 2004; Hitchens, 2007). Rather than simply reflecting credulity for dubious beliefs, zealous faith invokes active integrity and empowered eagerness to live a life of committed fidelity to cherished values. As such, it seems more a strategic gambit for meaningful living (McGregor & Little, 1998) than blind assent to an intellectual proposition. Our finding in Studies 2 and 3 of similar RAM reactions for theistic and less theistic participants indicates that belief system content is not central to the psychological benefits of zealous faith. The RAM view of zeal is consistent with original use of the Greek *pistis* and then Latin *fides* words (meaning *trust*, *loyalty*, *engagement*, *fidelity*, or *commitment*) for *faith* in the New Testament. Only after the King James translation to *belief* and then the migration in the 17th century of the meaning of the word *belief* toward theoretical knowledge did the word *faith* come to be seen as synonymous with intellectual assent to a hypothetical proposition (Armstrong, 2009, p. 87).

The RAM understanding of religious zeal as akin to single-minded action also holds promise for illuminating puzzling forms of angry and self-defeating religious extremism. Stern (2003) observed that individuals with spirited (i.e., approach motivated, in our view) personalities are targeted as potential recruits for ideological suicide bombing missions. In addition, goal conflict in the form of frustrated autonomy has been identified by diverse theorists as a cause of angry religious extremism (e.g., Armstrong, 2000; Stern, 2003), and anger is an approach-motivated emotion that produces single-minded motivation and perception (e.g., Carver & Harmon-Jones, 2009). Idealistic worldview defense reactions to threat are also specifically mediated by experienced anger (Lambert et al., in press; cf. Mullen & Skitka, 2006). The RAM results of the present research reveal that although angry and jingoistic zealots usually claim to be nobly promoting instrumental or social causes beyond the self, jingoistic extremes are animated by self-defensive RAM.

Regardless of whether religious zeal is compassionate or angry, however, the RAM view suggests a psychological function beyond the view of religion as a by-product of vigilant “external agency detection,” later exapted for purposes of social control and moral

⁷ The simple slope of engagement was nonsignificant in the threat condition ($p = .18$) and approached significance in the control condition ($p = .06$).

cohesion (e.g., Dawkins, 2006; Graham & Haidt, 2010; Norenzayan & Sharif, 2008). The vigilant agency-detection explanation is consistent with experimental research showing anxious situations increase superstition and belief in powerful external agencies (Kay et al., 2008; Norenzayan & Hansen, 2006; Whitson & Galinsky, 2008; but cf. King, Burton, Hicks, & Drigotas, 2007) and with research linking anxiety to vigilance (e.g., Gray & McNaughton, 2000) and relative right hemisphere activation to “sensed presence” (Cook & Persinger, 1997; Persinger & Healey, 2002). Such findings seem less relevant to the kind of personally empowered and idealistic RAM for religion that is the focus of the present research, however. RAM and power are associated with personal confidence and relative left hemisphere activation (Keltner et al., 2003; Kuhl & Kazen, 2008; McGregor et al., 2010; Nash et al., 2010).

Accordingly, in Study 1, the anxiety-averse participants did not react to anxious uncertainty by becoming more credulous of superstitious phenomena in general. Rather, they specifically heightened their idealistic religious convictions pertaining to spiritual ideals of soul, good, and evil. Moreover, in Study 2, it was only participants with relatively empowered, approach-motivated personality traits who reacted to the uncertainty threats with religious zeal, and, in Studies 2 and 3, effects were present even on the most extreme and jingoistic forms of zeal. Thus, the RAM processes driving the present findings seem specific to personally empowered religious zeal and distinct from processes that arouse vigilant, superstitious belief (Norenzayan & Hansen, 2006; Whitson & Galinsky, 2008).

A promising hypothesis for future research is that whereas superstitious elements of religious conviction may take root during experientially anxious episodes (Kay et al., 2008; Norenzayan & Hansen, 2006; Norenzayan & Sharif, 2008), empowered religious RAM may emerge during a subsequent phase of idealistic insulation from the anxiety. Preliminary support for this hypothesis comes from findings reported in a footnote by Norenzayan and Hansen (2006, footnote 4, p. 186), indicating that the superstitious reaction to threat occurred immediately but not after a delay. In contrast, idealistic worldview defense reactions to threats typically occur only after a delay (Pyszczynski et al., 1999). A two-phase process could help explain why meekly superstitious and boldly idealistic elements co-occur in reports of religious experience.

Cultural Reflections and Applications

Understanding muscular religious zeal as a manifestation of RAM may help explain why religious extremes tend to be more prevalent in Western than in East Asian cultures (Nisbett, Peng, Choi, & Norenzayan, 2001). Western personalities tend to be more approach motivated than East Asian personalities (Hamamura, Meijer, Heine, Kamaya, & Hori, 2009) and Western culture is also steeped in Greek philosophical assumptions that promote contemplation of pure ideals for a kind of happiness that can transcend worldly cares. Greek philosophers from Pythagoras to Plato passionately promoted ideal truth as the best and most reliable route to true well-being (Durant, 1939, 1950; McGregor, 2007; Tarnas, 1991), and Greek idealism shaped evolution of the three major Western monotheistic faiths (Judaism, Christianity, and Islam; Armstrong, 1993), especially their more extreme versions, which

have historically surged during periods of anxious uncertainty (Armstrong, 2000).

In Western religion, the allure of ideological zeal may be that it can reliably activate the resilience of transcendent approach motivation when temporal goals are frustrated. Unfortunately, religious extremists in the West have a long history of blood on their hands (Nisbett et al., 2001). The same empowering approach motivation that makes one soar may also obscure one’s view of others’ perspectives (cf. Galinsky, Magee, Inesi, & Gruenfeld, 2006) and facilitate ideological cruelty in the guise of noble cause. Such self-empowered, anger-related, and risk-immune RAM processes, in combination with scripture that advocates aggression toward others, may inflame religious violence in the West (Bushman, Ridge, Das, Key, & Busath, 2007; see also Harris, 2004).

Future research should further probe the secular premise that antisocial religious extremes can be supplanted by worldly human hope (e.g., as reflected in the Enlightenment and psychoanalytic views that optimal mental health and meaning should be sought by immersion in everyday domains of love and work). Preliminary support for this premise is found in Study 3, where reactive religious zeal emerged only among participants who did not feel empowered in their personal goals. Social policies to support engagement in goals related to basic human needs for competence, autonomy, and relatedness (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon & Elliot, 1999) might accordingly be one way to quell the motivation for religious extremism. Practical applications of the engagement hypothesis could be tested by measuring religious extremism in neighborhoods with matching risk for radicalization as a function of resources available for youth engagement.

Another way to quell the impulse toward antisocial religious extremism might be to promote religious themes that highlight self-compassionate and benevolent framing of anxious experience (Leary, Tate, Adams, Allen, & Hancock, 2007). Despite the occasional eruption of aggressive and jingoistic themes in their religious texts, the three Judaic monotheistic faiths are grounded in themes that emphasize compassionate grace toward oneself and vulnerable others. Versions of all three also discourage anxious preoccupation with personal goals and priorities, in part by shifting motivational focus from personal advancement to collective well-being (Armstrong, 1993, 2006, 2009; cf. Crocker & Park, 2004). Christianity, for example, is grounded in a core narrative of self-sacrifice and compassion, and Islam literally means submission of personal desire to God’s will of charity and compassion (Smith, 1986). Recent evidence also indicates that across varied religious identifications, simple religion primes make people significantly more compassionate under anxious circumstances that, without religion primes, cause selfish and hostile reactions (Schumann, Nash, McGregor, & Ross, 2010). Given its doctrinal centrality and intuitive appeal, compassionate engagement could perhaps supplant hostile jingoism if promoted effectively as the authentic religious response to the uncertainties of human life (as by Armstrong, 2006, 2009, 2010).

Eastern traditions reflect this religious posture in their explicit promotion of humble and compassionate alternatives to idealistic absolutes. Confucianism is grounded in moral codes that emphasize “fellow feeling,” attentiveness to others’ perspectives and the dialectical nature of reality. Taoism advocates personal emptiness and openness to influence (Smith, 1986). In Buddhism, mindful

focus on temporal goals, such as breathing or walking, combined with a commitment to vigorous compassionate action are recommended for coping with human suffering in a nonideological way (Smith, 1986). Intriguingly, Buddhist meditation techniques that focus the will on nonideological but still reliable goals such as breathing and compassionate action are also associated with approach motivation patterns of brain activation (Davidson et al., 2003). They may thereby provide approach-motivated resilience in the face of anxiety, but in a mindful and self-compassionate manner free of the collateral damage that can be associated with self-serving attachment to idealistic extremes.

It has been argued that at their essential best, the worlds' Eastern and Western wisdom traditions help people face, not hide from, the bewildering realities of human existence (Smith, 1986, p. 14). Insofar as authentic religious practice invokes engagement (Armstrong, 2009), this claim is consistent with the Study 3 finding that goal engagement enabled nondefensiveness in the face of anxious uncertainty. As is evident in world events and as is shown in the current research, however, the more jingoistic varieties of religion still have broad reactive appeal. It is ironic that the modern decline in authentic religious practice (Armstrong, 2009) may leave individuals particularly vulnerable to antisocial religious extremes. Improved understanding of the motivational mechanics of both authentic religious practice and jingoistic religious zeal could provide balanced guidance for people and policy.

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