Journal of Social Issues, Vol. 69, No. 3, 2013, pp. 537-563; http://dx.doi.org/10.1111/josi.12028

Anxious Uncertainty and Reactive Approach Motivation (RAM) for Religious, Idealistic, and Lifestyle Extremes

Ian McGregor*
York University, Canada

Mike Prentice
University of Missouri

Kyle Nash
York University, Canada

Reactive Approach Motivation (RAM) theory proposes that the personal uncertainty arising from motivational conflict causes anxiety, and that anxiety draws people to extremes because extremes activate approach-motivated states that automatically downregulate anxiety. Five new studies consolidate existing evidence for the RAM view of uncertainty-related threats and reactive extremism. In Studies 1–3, religious, idealistic, and RAM reactions after agentic, communal, and mortality threats were most extreme when threat-relevant goals had been implicitly primed to create motivational conflict. In Study 4 uncertainty predicted extreme reactions only if goal conflict had been experimentally manipulated. In Study 5 personal uncertainty uniquely predicted lifestyle extremes among undergraduates whose educational goals were conflicted by a labor disruption at their university. Results converge on the conclusion that uncertainty-related threats cause defensively extreme RAM reactions only if they arouse personal uncertainty about active goals. Results suggest that policies and programs to support the prosocial and/or

nonextreme goals, ideals, and identifications of at-risk people would reduce their motivation for antisocial extremism.

Why do people go to extremes? Reactive Approach Motivation (RAM) theory proposes that eagerly engaging in religious, idealistic, or behavioral extremes provides an efficient and potent antidote to the experience of anxiety (McGregor, 2006; McGregor, Nash, Mann, & Phills, 2010). Anxiety arises when goal pursuit is impeded by conflict, frustration, or uncertainty (Gray & McNaughton, 2000; Hirsh, Mar, & Peterson, 2012). Religious, idealistic, and behavioral extremes are rewarding because they help people engage clearly approach-motivated states that automatically mute anxiety (McGregor, Nash, & Prentice, 2010; Nash, Inzlicht, & McGregor, 2012; Nash, McGregor, & Prentice, 2011). The RAM view is consistent with theories of terror management (Greenberg, Solomon, & Pyszczynski, 1997), lay epistemics (Kruglanski, 1989), uncertainty management (Hogg, 2012; McGregor, 2006; Van den Bos, 2009), compensatory control (Kay & Eibach, 2013), and meaning maintenance (Heine, Proulx, & Vohs, 2006; Proulx, Inzlicht, & Harmon-Jones, 2012; Proulx & Major, 2013). The contribution of RAM theory is that it parsimoniously explicates a neural and motivational process capable of integrating competing theoretical perspectives about the motivation for extremism without having to posit super-ordinate motivational constructs beyond the basic anxiety and approach-motivation systems that humans share with pigeons and fish.

The RAM view is guided by research on the Behavioral Inhibition System (BIS)—a motivational system humans share with other vertebrate animals. The BIS regulates motivational processes when goal progress is threatened by awareness of goal conflict or impedance, or by bewildering, novel, or obstructed terrain (Gray & McNaughton, 2000; Hirsh et al., 2012; Proulx et al., 2012). Under such conditions the BIS initiates an aroused and anxious vigilance that persists until a tenable alternative goal or means for the original goal resumes unconflicted engagement. Once clear engagement is resumed motivated attention again becomes constrained to task-relevant thoughts and perceptions, and inconsistent and distracting stimuli become automatically suppressed to facilitate goal completion (Harmon-Jones, Amodio, & Harmon-Jones, 2009; McGregor, 2006). With the resumption of clear, approach-motivated engagement, BIS-regulated anxiety is correspondingly relieved (Nash et al., 2012). This basic process can enable conflicted and bewildered organisms to pragmatically shift to alternative means in less fraught terrain in service of the original end (Kruglanski et al., 2002), but it is also conducive to palliative engagement in any alternative, unrelated goal that would be rewarding to the extent that it could be eagerly pursued without conflict.

Extreme absorption in idealistic or ideological goals may be a particularly attractive strategy for achieving such relief from anxious personal uncertainty. Ideational and behavioral extremes are similarly processed for humans. The same

approach-motivation-related neural processes occur when adults think about the ideals that guide their lives (Amodio, Shah, Sigelman, Brazy, & Harmon-Jones, 2004) as when sugar is placed on a baby's tongue (Fox & Davidson, 1986). As different as they may seem the difference between the pursuit of ideals and sweets, from a goal-regulation perspective, is only in their level of abstraction. Ideals are abstract goals that can be promoted with the same kind of determination and eager absorption as concrete goals. Indeed, there is evidence that ideological goals may be particularly intuitive as vehicles for RAM relief from anxiety, perhaps because they tend to be pure and uncomplicated by ambivalent complexities and compromises (see Klein & Kruglanski, 2013). Idealistic goals seem to be the spontaneous lever people use to activate the sanguine relief of RAM (McGregor, Galliot, Vasquez, & Nash, 2007; McGregor, Nash, Mann, & Phills, 2010; McGregor, Nash, & Prentice, 2010; Nash et al., 2011).

In the present article, we review existing evidence for the front end (motivational conflict), middle (personal uncertainty/anxiety), and back end (approach motivation for extremes) of RAM theory. We then report results of five new experiments that further consolidate evidence for a RAM understanding of socially consequential forms of defensive extremism.

The Front End of RAM Theory: The Role of Motivational Conflict

Following Gray and McNaughton (2000) our starting premise is that the essential psychological trigger for personal uncertainty and anxiety is motivational conflict (see Hirsh et al., 2012). We recently published four studies demonstrating it is specifically motivational conflict imposed by uncertainty threats that arouses anxious-uncertainty, reactive ideology, and approach motivation. Those four studies demonstrated that achievement and relationship threats caused anxious, ideological, and approach-motivated reactions only when they conflicted with implicitly primed goals germane to the subsequent threats (Nash et al., 2011).

In the first study participants were randomly assigned to complete a scrambled sentence task that implicitly primed either achievement or relationship goals. They were then confronted with randomly assigned achievement or relationship threats. Participants felt significantly more anxious about each kind of threat when it was preceded by a relevant goal prime. In the second study the same combination of goal primes (this time primed with crossword puzzles) and same-domain uncertainty threats caused self-reported RAM in participants' personal goals in life. In the third study, an academic dilemma caused behavioral neuroscience evidence of RAM when preceded by the (crossword) achievement goal prime but not a neutral prime. In the fourth study, a relationship uncertainty threat caused ideological conviction when the relationship threat was preceded by the (scrambled sentence) relationship goal prime but not by the achievement goal prime. Moreover, this

effect was eliminated among participants who had a randomly assigned chance to misattribute their anxiety to a mundane source.

Studies 1–3 in the present research extend these past goal-priming findings in several ways. Study 1 demonstrates for the first time that the same kind of implicitly primed achievement-goal conflicts can cause religious extremism. Study 2 demonstrates for the first time that implicitly primed goal conflict causes idealistically extreme reactions regardless of whether the prime precedes or follows the threat. Study 3 uses the same goal-priming logic to show that extreme reactions to mortality salience may also arise from motivational conflict.

As with agentic and communal threats, mortality salience threats have been linked to anxious uncertainty. In one study a randomly assigned mortality salience (vs. neutral) threat significantly heightened self-reported felt uncertainty as assessed by the items "bothered," "uneasy," "uncomfortable," "aroused," "excited," "anxious," but not general positive or negative affect (McGregor, Zanna, Holmes, & Spencer, 2001, Study 3). Moreover, personal uncertainty and mortality salience threats often have similar effects on a variety of defensive outcomes (Heine et al., 2006; McGregor, 2006; McGregor et al., 2001; Proulx et al., 2012; Van den Bos, Poortvliet, Maas, Miedema, & Van den Ham, 2005), and mortality salience effects on angry reaction are particularly strong among participants for whom mortality salience reminds them of uncertainty (Van den Bos, 2005, Study 3, Footnote 8; for an explanation of why mortality salience and other threats should be so fundamentally linked to personal uncertainty, see Hirsh et al., 2012; McGregor, 2006; Proulx et al., 2012). Detection of the anxious uncertainty elicited by mortality salience is often shrouded in research studies by the routine use of inadequate manipulation checks that are insensitive to the specific kind of affect related to uncertainty. Detection of uncertainty-related distress is also often hampered by routine assessment of affect immediately after mortality salience when both uncertainty and mortality concerns are momentarily suppressed (McGregor, Prentice, & Nash, 2009).

Personal uncertainty salience manipulations cause the same kinds of defensive reactions as mortality salience when they remind participants of important goal-relevant uncertainties more akin to insecurities than merely informational uncertainties. Original research on personal uncertainty demonstrated this by either plunging participants into thoughts about their real life goal dilemmas (McGregor et al., 2001) or requiring them to reflect on personal insecurities (Van den Bos, 2001)—in both cases participants reacted with the same kinds of extremism as after mortality salience (see also McGregor Prentice, & Nash, 2009; Van den Bos, 2009; Van den Bos et al., 2005).

Imprecise Dutch–English language translation has sometimes obscured this now well-established link between mortality salience and personal uncertainty (Pyszczynski, Greenberg, Solomon, & Maxfield, 2006). The Dutch word for uncertainty used in Dutch uncertainty-salience manipulations implies a grapply kind of personally insecure uncertainty. Dutch research that asks participants to

describe their uncertain feelings is therefore asking participants to describe important personal uncertainties (akin to Hogg & Adelman, 2013). Mortality salience researchers have often failed to replicate the well-established personal uncertainty effect on outcomes related to extremism because they translate the Dutch manipulation of "personally uncertain" as merely the word, "uncertain." Mere informational uncertainty is too trivial to arouse anxiety and cause extreme reactions (see Van den Bos, 2009, for discussion of distinction between informational and personal uncertainty, and McGregor Prentice, & Nash, 2009 for empirical evidence for the translation effect).

The Middle of RAM Theory: Experienced Personal Uncertainty and Anxiety

There is reason to believe that anxious personal uncertainty may mediate the effects of various psychological threats on ideological and RAM reactions. Indeed, most of the threats that cause ideological and worldview defenses, including mortality salience, have been theoretically and empirically linked with personal uncertainty or anxiety (Nash et al., 2011; Proulx et al., 2012; Van den Bos et al., 2005). In our past research we have found that the mortality, dilemma, achievement, and relationship related uncertainty threats (the ones used in the present research) that have caused extreme ideological and RAM reactions also cause specific increases in self-reported personal uncertainty (but not general positive or negative affect; McGregor & Marigold, 2003; McGregor, Nash, & Inzlicht, 2009; McGregor, Nash, Mann, & Phills, 2010; McGregor, Nash, & Prentice, 2010; McGregor et al., 2001, Studies 1 and 2). Moreover, allowing participants to misattribute their uncertainty and anxiety to an external source eliminates ideological reactions to goal conflict (Nash et al., 2011) and to various other uncertainty-related threats that usually cause ideologically extreme reactions (reviewed in Nash et al., 2011). Still, evidence for the mediating role of personal uncertainty in idealistic and RAM reactions remains indirect. Accordingly, Studies 4 and 5 presented below provide more direct evidence for the unique role of personal uncertainty in idealistic and behavioral RAM reactions to goal conflict. Study 4 investigates whether self-reported personal uncertainty most strongly predicts extreme reactions when in the context of goal conflict, and Study 5 tests whether personal uncertainty specifically mediates behavioral lifestyle extremes in the context of real-life goal impedance.

The Back End of RAM Theory: Defensive Extremes are Approach-Motivated

There are now hundreds of published experiments demonstrating that a wide range of uncertainty-related perceptual, self, existential, and goal threats are

capable of causing compensatory extremes in domains not closely linked to the domains of the threats (reviewed in Nash et al., 2011). There is also theoretical and empirical reason to believe that the extremism may be mediated by approach motivation (Hirsh et al., 2012; Marigold, McGregor, & Zanna, 2010; McGregor, 2006; Nash et al., 2011). Achievement and relationship threats, for example, have caused increased brain activity, perceptual bias, and implicit associations indicative of a reactive shift to generalized approach motivation (McGregor, Nash, Mann, & Phills, 2010). Relationship and mortality salience threats also cause research participants to shift toward pursuing more approach-motivated personal goals in life—a shift completely mediated by the extent to which those goals are idealistic and ideological (McGregor et al., 2007; McGregor, Nash, Mann, & Phills, 2010). Responses to achievement, relationship, and mortality threats are also often hostile, and anger is closely tied to approach motivation (Carver & Harmon-Jones, 2009). Moreover, approach-motivated personality traits consistently moderate idealistic, ideological, and approach-motivated reactions to agentic, communal, and mortality threats (McGregor et al., 2007; McGregor & Marigold, 2003; McGregor, Nail, Marigold, & Kang, 2005; McGregor, Nash, & Inzlicht, 2009; McGregor, Nash, & Prentice, 2010; Schmeichel et al., 2009). Study 5 of the present research fortifies the approach-motivation interpretation of defensive extremism by demonstrating that the personal uncertainty from a real-life goal disruption predicts a behavioral correlate of approach motivation—disinhibited, risky, and extreme lifestyle choices (Keltner, Gruenfeld, & Anderson, 2003; Smillie & Jackson, 2006; Smillie et al., 2006, Suhr & Tsanadis, 2007).

Study 1: Achievement Goal Conflict and Religious Idealism

Past research has found that an achievement uncertainty manipulation (requiring undergraduate psychology students to summarize an incomprehensible passage from a graduate structural equation modeling textbook) reliably causes a reactive surge in domain-nonspecific extremity, conviction, idealism, and approach motivation. Specifically, it has caused extremity and conviction for social issue opinions about capital punishment, abortion, and terrorism (McGregor et al., 2005; McGregor & Jordan, 2007); tenacious and idealistic devotion to personal goals (Nash et al., 2011) devotion and willingness to kill and die for idealistic religious beliefs (McGregor, Haji, Nash, & Teper, 2008; McGregor, Nash, & Prentice, 2010); electroencephalographic and behavioral neuroscience evidence of brain activity characteristic of approach motivation (McGregor, Nash, & Inzlicht, 2009; McGregor, Nash, Mann, & Phills, 2010; Nash, McGregor, & Inzlicht, 2010); and implicit associations of self with approach-related words and dissociations with avoidance-related words (McGregor, Nash, Mann, & Phills, 2010).

Other results suggest that such idealistic and eager reactions are specifically caused by motivational conflict. In two studies, the statistics-related achievement

uncertainty manipulation only caused anxiety and RAM if an implicit achievement goal had first been primed, but not when a relationship goal had been primed (Nash et al., 2011). The present study accordingly tested for the first time whether extreme religious idealism after the same statistics-related achievement uncertainty manipulation might similarly depend on whether an implicit achievement goal had been primed. If so, extremes of religious idealism could more confidently be understood as being exacerbated by basic goal conflict.

Participants and Procedure

Sixty-two undergraduates (48 female) at a Canadian university participated for credit in their introductory psychology course. Four were excluded for incorrectly completing the materials, leaving 58 participants (45 females) for analyses (age, $M = 19.72$). Participants were preselected based on their identification with a religious belief system: Christian = 57%, Muslim = 22%, Hindu = 10%, Jewish = 3%, Buddhist = 2%, Other = 5%. Ethnic identifications of participants were: White = 40%, South Asian = 26%, Asian = 10%, Black = 7%, Arab = 5%, Latin American 3%, Other = 7%, Declined to Answer = 2%. In this diverse sample, 40% of the participants were born in a country other than Canada. More generally, in this student population 78% report identifying with one of the religious belief systems versus 22% identifying as agnostic or atheist. The religious, ethnic, and international diversity of this sample is typical of this student population in which approximately 80% of the students have one or both parents born in a country other than Canada (Studies 2–5 were drawn from this same population). Data were collected online in a single session and the materials were presented as a series of unrelated personality tasks and opinion questionnaires.

Materials

Goal primes. Participants completed a scrambled sentence task that implicitly primes goals (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001). The task requires unscrambling of 16 sets of five words to form grammatical sentences. Participants were randomly assigned to either an achievement goal-prime or neutral prime condition. In the achievement goal-prime condition, eight of the sentences contained achievement related words (e.g., *strive, excellence*).

Achievement uncertainty manipulation. All participants were then randomly assigned to either the statistics achievement uncertainty condition from McGregor et al. (2005), described above, or a similar no-threat control condition in which participants summarized a simple passage underlining the utility of statistics in daily life.

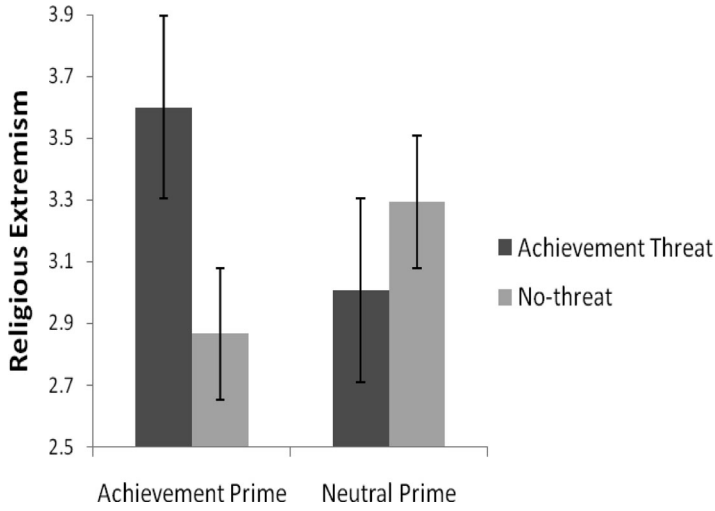

Fig. 1. Idealistic religious extremism as a function of goal prime and threat in Study 1.

Delay period and dependent measure of religious extremism. The delay task in this study instructed participants to let their minds wander for three minutes and record the topics that came to mind. Three minutes has been sufficient to allow for RAM and defensive extremes to emerge in past research (e.g., McGregor, Nash, Mann, & Phills, 2010). Participants then completed a 17-item religious extremism scale adapted from previous research (see McGregor, Nash, & Prentice, 2010, for 16 of the items). Participants rated their agreement on a 1–5 scale (from 1 = *strongly disagree* to 5 = *strongly agree*) with statements such as "My religious beliefs are grounded in objective truth," and "I would support a war that defended my religious beliefs." In this study we added a new item to explicitly tap willingness to engage in divinely inspired radical action, "If I was sincerely convinced that God wanted me to do something extreme, I would do it." The 17 items were averaged for an overall religious extremism score, $\alpha = .95$.

Results and Discussion

A 2 (Goal Prime: Achievement Prime vs. Neutral Prime) × 2 (Uncertainty Threat: Achievement Uncertainty vs. Low-Uncertainty) between-subjects ANOVA revealed a significant Goal Prime × Uncertainty Threat interaction effect, $F(1, 54) = 5.73$, $p < .05$, $\eta_p^2 = .10$ (see Figure 1). Planned pairwise comparisons revealed that Religious Extremism was higher in the Achievement Prime × Achievement Uncertainty condition ($M = 3.58$, $SD = .85$) than in either the Achievement Prime × Low-Uncertainty condition ($M = 2.85$, $SD = .64$), $F(1,$

54) = 5.68, $p < .05$, $\eta_p^2 = .10$ or in the Neutral Prime × Achievement Uncertainty condition ($M = 2.93$, $SD = .80$), $F(1, 54) = 5.16$, $p < .05$, $\eta_p^2 = .09$. Although the sample size was too small to assess effects within specific religious affiliations, other research with larger samples indicates that religious RAM is a generic response across religious groups (McGregor, Nash, & Prentice, 2010; Schumann, McGregor, Nash, & Ross, 2013). Study 1 demonstrates that the uncertainty generated by frustrating an active achievement goal causes extreme religious idealism. This finding is consistent with past research showing that threats caused the most religiously extreme reactions among participants whose goals in life were not going well (McGregor, Nash, & Prentice, 2010).

Study 2: Relationship Goal Conflict and Personal Goal Conviction

Study 2 conceptually replicates and theoretically extends the results of Study 1 and the results presented in Nash et al. (2011). Specifically, in Study 2 the randomly assigned relevant or irrelevant goal primes were placed *after* the threats. We reasoned that priming a goal in the same domain as a previously threatened goal should arouse just as much goal conflict as priming a goal in the same domain as a subsequently threatened goal does. This is an important point because one possible critique of our goal priming work to date, in which goal primes have always preceded uncertainty threats, could be that the threat-irrelevant goal-primes somehow shield participants from fully experiencing the subsequent uncertainty threat. If so, then it would be premature to conclude, as we have elsewhere, that uncertainty-threat manipulations are consequential only to the extent that they raise the prospect of goal impedance. Positioning the goal prime after the threat ensures that all participants process the uncertainty-threat materials to the same extent, but that the uncertainty-threat becomes consequential only when it arouses motivational conflict.

Study 2 crossed randomly assigned achievement versus relationship goal primes with randomly assigned relationship uncertainty versus low uncertainty materials. In past research, the relationship uncertainty materials used in Study 2 caused compensatory conviction for opinions about capital punishment and abortion (McGregor & Marigold, 2003), implicit associations of self with approach and dissociations of self with avoidance motivation terms (McGregor, Nash, Mann, & Phills, 2010), and extreme religious devotion, including willingness to kill and die for one's religious belief system (McGregor, Nash, & Prentice, 2010). Other relationship uncertainty threats in our research have also caused ideological extremism about social issues and religious affiliations (McGregor et al., 2005; McGregor et al., 2008), and approach motivation and idealism in personal goals (McGregor, Nash, Mann, & Phills, 2010). Moreover, the exact relationship uncertainty manipulation used in Study 2 has caused the most self-reported anxious uncertainty, the

most reactive approach motivation, and also the most compensatory conviction about an ideologically charged social issue (capital punishment) when *preceded* by a relationship goal prime (Nash et al., 2011).

The design for Study 2 was a between subjects 2 (Uncertainty Threat: Relationship Uncertainty vs. Low-Uncertainty Control) × 2 (Goal Prime: Achievement Prime vs. Belongingness Prime). The dependent variable focused on idealistic extremes in participants' personal goals. Contemplating ideals, a key component of an approach motivation mindset (Higgins, 1997), has been associated with approach-related EEG activity (Amodio et al., 2004). Further, idealistic and approach-motivated personal project dimensions are closely linked (McGregor et al., 2007; McGregor, Nash, Mann, & Phills, 2010). In Study 2 we accordingly predicted that priming a relationship goal after the relationship uncertainty manipulation would cause reactive approach for ideals in participants' personal projects.

Participants and Procedure

Undergraduates ($n = 112$) completed all study materials online in exchange for partial credit in an introductory psychology course (age, $M = 19.40$). Six who incorrectly completed the goal priming/threat materials were excluded from the analyses leaving 106 participants (83 female). Study materials were described to participants as pretest measures of personality and goals.

Materials

Relationship uncertainty manipulation. Participants were randomly assigned to complete either the relationship uncertainty or low-uncertainty materials from McGregor and Marigold (2003). In the relationship uncertainty condition participants nominated a close personal relationship that was currently not going very well, described the problems, and imagined the possibilities that the relationship would remain troubled or even get worse. In the low uncertainty condition participants nominated a friend's relationship that was not going very well and responded to the same questions about it.

Goal prime conditions. After completing the threat materials, participants were then randomly assigned to complete either the scrambled sentence achievement goal prime used in Study 1, or a matched relationship goal prime (with words such as *caring*). This task was completed immediately after the threat manipulation and served a dual role as the delay period.

Reactive idealistic approach. Participants then completed a personal projects analysis (Little, 1983) module in which they listed four central goals

in their lives and rated them on eight dimensions. Along with the two approach dimensions from Nash et al. (2011), we included six dimensions related to tenacious and idealistic approach (from McGregor et al., 2007), including Determination (How firmly determined are you to complete it, even if it requires sacrifices?); Outcome (How likely are you to make this goal go as planned?); Value-Congruence (To what extent does it reflect the most important values that guide your life?); Conviction (How certain do you feel that this is a goal that you want to engage in?); Self-Identity (To what extent does it reflect the kind of person you really are, at your core?); and Control (To what extent do you feel in control of how this goal turns out?). Consistent with previous research (McGregor et al., 2007), a principal components analysis of the personal project dimension scores was unifactorial, explaining 61.4% of the variance, with all dimension loadings $> .65$. A reliability analysis of the eight dimension scores revealed good internal consistency, $\alpha = .91$. Thus, we created a unit-weighted dependent variable labeled Reactive Idealistic Approach.

Results and Discussion

We conducted a 2 (Uncertainty Threat: Relationship Uncertainty vs. Low Uncertainty) $\times$ 2 (Goal Prime: Achievement Prime vs. Relationship Prime) between-subjects ANOVA with Reactive Idealistic Approach as the dependent variable. There was a significant Uncertainty Threat $\times$ Goal Prime interaction effect, $F(1, 102) = 5.39, p < .05, \eta_p{}^2 = .05$. Planned pairwise comparisons revealed that Reactive Idealistic Approach was higher in the Relationship Uncertainty–Relationship Prime condition ($M = 5.83$, $SD = .65$) than in either the Low Uncertainty—-Relationship Prime condition ($M = 5.39$, $SD = .67$), $F(1, 102) = 5.24$, $p < .05$, $\eta_p{}^2 = .05$ or in the Relationship Uncertainty–Achievement Prime condition ($M = 5.35$, $SD = .57$), $F(1, 102) = 6.82$, $p < .05$, $\eta_p{}^2 = .06$ (see Figure 2). Study 2 thus demonstrates that an uncertainty-related goal-conflict can cause an extreme reaction regardless of whether the goal prime precedes (Study 1) or follows (Study 2) the uncertainty threat.

Study 3: Priming Goals before Mortality Salience

Studies 1 and 2 demonstrate that people respond to uncertainty-related goal conflicts with reactive approach of religious, idealistic, and tenacious extremes. Mortality salience has caused very similar outcomes in research conducted over the past 25 years (see Burke, Martens, & Faucher, 2010 for a recent meta-analysis). Moreover, in our own research mortality salience has caused participants to surge toward ideals and personal meanings in the same way that other personal uncertainty threats have (McGregor et al., 2001; McGregor Prentice, & Nash, 2009; Schmeichel et al., 2009). Mortality salience has also caused participants to

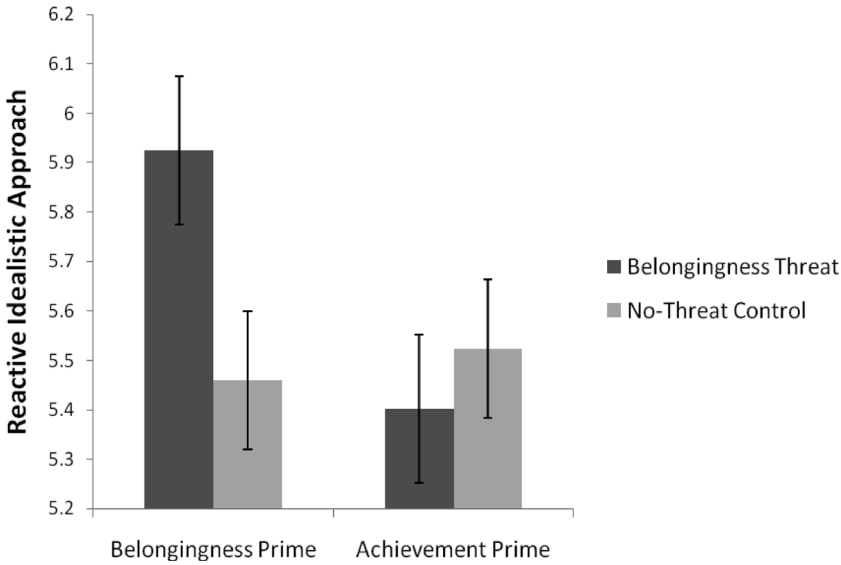

Fig. 2. Reactive idealistic approach as a function of goal prime and threat in Study 2.

exaggerate idealistic approach motivation in their personal goals on a dependent measure very close to the one used in Study 2 above (McGregor et al., 2007). According to our RAM view, mortality salience is such a powerful psychological threat because it is the ultimate source of goal conflict (death casts an uncertain shadow on all temporal goals—achievement and belongingness alike).

We tested this goal conflict account of mortality salience effects by randomly assigning participants to achievement goal, relationship goal, or neutral primes before they all completed the two-question mortality salience manipulation most frequently used in terror management theory research (Greenberg et al., 1997). They then completed a dependent measure that assessed the extent to which their personal goals were relatively more approach than avoidance motivated. Using a relative measure of approach motivation helps rule out the possibility that the results of Study 2 could reflect heightened motivation of any kind. We predicted greater RAM reactions after mortality salience in the goal prime conditions.

Participants and Procedure

Ninety-five undergraduates (58 female) participated for course credit (age, $M = 19.70$). Two participants were excluded from all analyses for incorrectly completing the materials, leaving 93 participants (57 female). The aim of the study was obscured as in Studies 1 and 2.

Materials

Goal prime. Participants were randomly assigned to either an achievement goal prime, relationship goal prime, or neutral prime condition. Goal-relevant words embedded in the achievement and belongingness priming tasks were similar to those of Studies 1 and 2. In the neutral priming condition, participants received a word-search puzzle with target words unrelated to normative goal constructs (e.g., *ranch*, and *hat*; Bargh et al., 2001).

Mortality salience. All participants then completed mortality salience materials. They were given 2 minutes for each of two questions that asked them (i) to describe the emotions that the thought of their own death arouses in them, and (ii) to describe their thoughts about what will happen to their bodies as they physically die (see Rosenblatt et al., 1989).

Delay period and relative approach motivation. Participants then completed the mind wander delay task used in Study 1 and a dependent measure of Relative Approach Motivation derived from participants' ratings of their four most self-characteristic personal projects on the two approach and two avoidance personal project dimensions from Nash et al. (2011, Study 2). The personal project approach and avoidance indices had satisfactory reliability αs of .73 and .78, respectively.

Results and Discussion

Following Nash et al. (2011) and Gable (2006), we created a difference score representing clear approach motivation by subtracting the avoidance average from the approach average to create the Relative Approach Motivation score. This score was then entered into a one-way ANOVA with the Goal Prime conditions as the between-group variable. The results revealed a significant ominibus $F(2, 90) = 3.22$, $p < .05$, $\eta^2_p = .07$. As predicted, planned comparisons revealed significantly lower Relative Approach Motivation in the Neutral Prime condition ($M = .26$, $SD = .92$) than in either the Achievement Prime condition ($M = .82$, $SD = 1.04$), $F(1, 90) = 4.58$, $p < .05$, $\eta^2_p = .05$ or the Belongingness Prime condition ($M = .86$, $SD = 1.05$), $F(1, 90) = 5.24$, $p < .05$, $\eta^2_p = .05$. The Achievement and Relationship Prime conditions did not differ ($F < 2$; see Figure 3). These results are consistent with the RAM view that mortality salience is particularly effective at inflaming defensive extremes because it undermines both agentic and communal goals alike.

Studies 1–3 support the front (motivational conflict) end of the RAM model. The most pronounced idealistic and tenacious RAM occurs when threat-relevant goals are primed. The results of Studies 1–3 also provide additional evidence

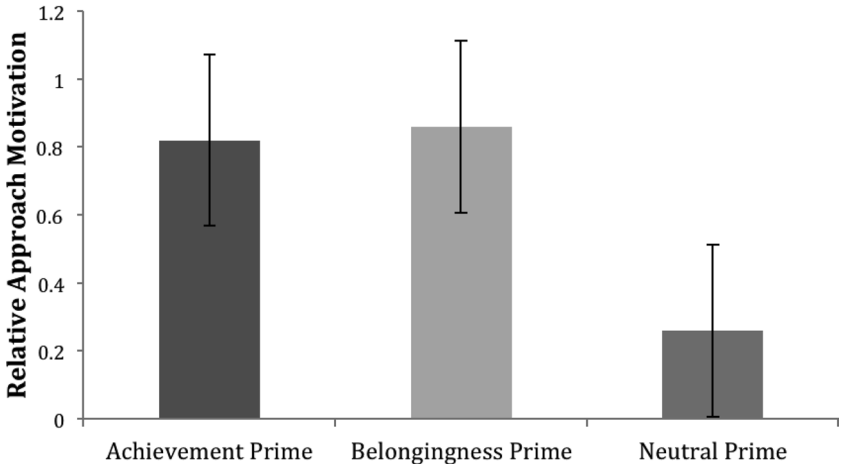

Fig. 3. Relative approach motivation after mortality salience as a function of goal prime in Study 3.

for the back (approach-motivation) end of the RAM model. If they undermine relevant goals, achievement, relationship, and mortality threats predict reactive approach-motivation for personal goals in life.

Study 4

Studies 4 and 5 probe the middle of the RAM model and focus on the mediating role of subjectively experienced personal uncertainty. Despite ample evidence of links between various threats and subjective personal uncertainty (Arndt & Goldenberg, 2002; Elliot & Devine, 1994; Nash et al., 2011; Van den Bos et al., 2005; Van Harreveld et al., 2009), evidence for mediation of the link between threat and defense by personal uncertainty has been elusive. Three issues likely account for difficulty in demonstrating the mediating role of personal uncertainty.

First, if the purpose of habitual defensive reactions is to block the experience of anxious uncertainty, then participants' self-reports might be unreliable. Indeed, threat researchers across theoretical orientations have repeatedly demonstrated that immediately after threat experiences, proximal defenses elevate positive affect and inhibit awareness of distressing thoughts and feelings (e.g., DeWall & Baumeister, 2007; Dodgson & Wood, 1998; Pyszczynski, Greenberg, & Solomon, 1999; Wichman et al., 2008). In our own research, we have accordingly been most successful in detecting effects of our threats on manipulation checks of personal uncertainty and anxiety after substantial delays. After 5 minutes participants seem able to report unpleasant feelings associated with prior threats (e.g., McGregor et al., 2001; Nash et al., 2011).

Second, the Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) are typically used to measure negative affect after threats, but they are not well suited to detecting feelings related to personal uncertainty and anxiety. Based on the RAM premise of specific links between motivational conflict, personal uncertainty, and anxiety, we use a 19-item personal uncertainty scale to specifically assess anxious and uncertain feelings. Uncertainty-related threats have specifically increased personal uncertainty on this scale, but had no effect on positive or negative PANAS scales or on state self-esteem (McGregor et al., 2001; McGregor & Marigold, 2003). Other, shorter manipulation checks of personal uncertainty, focusing on adjectives such as *bothered*, *uneasy*, and *uncomfortable* (Elliot & Devine, 1994), or *uncertain*, *anxious*, and *frustrated* have also been affected by the uncertainty threats like those in Studies 1 and 2 in the present research (McGregor et al., 2001; McGregor, Nash, & Inzlicht, 2009; McGregor, Nash, Mann, & Phills, 2010; Nash et al., 2011).

A third limitation of past research attempting to demonstrate that personal uncertainty mediates the effects of threats on reactive defenses is that scales targeting feelings related to uncertainty often fail to differentiate between informational uncertainty and personal uncertainty. People are willing to report feeling confused, uncertain, and ambivalent about circumstances or scenarios that are not closely linked to the self or important personal goals. For example, many of us might readily admit to feeling highly confused and uncertain about quantum physics or the life-cycle of a newt, but as these domains of knowledge have little bearing on our salient goals in life, such informational uncertainties do not cause defensive reactions (Van den Bos, 2009; empirical demonstration by McGregor, Prentice, & Nash, 2009). Indeed, informational uncertainty tends to have the opposite effect. It spurs scrutiny and vigilant analysis of specific, concrete information at hand, which *decreases* heuristic and idealistic judgments (e.g., Weary, Jacobson, Edwards, & Tobin, 2001). Moreover, in nonthreatening circumstances, low informational uncertainty increases personal confidence and reliance on heuristic and ego-centric judgments (e.g., Petty, Briñol, & Tormala, 2002). It is this kind of informational uncertainty that participants in no-threat control conditions are likely inclined to report on self-report uncertainty scales.

In contrast, in uncertainty threat conditions, when uncertainty is experienced in contexts that are consequential for important personal goals, there is a reverse tendency for the (now personal) uncertainty to defensively boost ego-centric, heuristic, and ideological judgments (McGregor, Prentice, & Nash, 2009; Van den Bos et al., 2005). Under these conditions of more threatening personal uncertainty, self-reports on uncertainty-affect scales will reflect the more insecurity-related kinds of uncertainty that should be correlated with defensive reactions. Accordingly, with these different interpretations of uncertainty in the control and experimental conditions, experimental designs that experimentally manipulate personal uncertainty and then assess uncertainty-related affect on a self-report

scale are not well equipped to detect statistical mediation (Spencer, Zanna, & Fong, 2005).

In such circumstances, a better test of the role of personal uncertainty would be a statistical test of *moderation*. A statistical test of moderation would assess the significance of differences between the uncertainty-extremism slopes in personal uncertainty (i.e., personal goal relevant) versus merely informational uncertainty circumstances. A positive slope would be expected in the personal-goal-relevant, and a negative slope would be expected in the personal-goal-irrelevant condition (see Haas & Cunningham, in press, for a similar application of this technique). Study 4 accordingly tests the moderational hypothesis that self-reported uncertainty should differentially predict ideological extremes in randomly assigned personal-goal-relevant (i.e., personal uncertainty) versus personal-goal-irrelevant (i.e., informational uncertainty) uncertain circumstances.

Participants and Procedures

Fifty-six female and 17 male undergraduates participated for course credit (age, $M = 20.18$). They first completed randomly assigned personal uncertainty versus informational uncertainty materials. They then completed ten minutes worth of neutral filler materials that provided the substantial delay after the threat. After the delay participants completed the Felt Uncertainty scale, the negative affect subscale of the PANAS (Watson et al., 1988), and then the dependent measure of ideological conviction.

Materials

Personal uncertainty manipulation. In the personal uncertainty condition participants answered several questions about the conflicting goals and values associated with a current difficult dilemma in their lives. They were instructed that the dilemma should be complex and should take the form of "Should I . . . or not?" After naming the dilemma they further summarized the conflicting personal values associated with the dilemma's conflicting sides, and then speculated about consequences of acting in either direction. In the informational uncertainty condition participants instead answered similar questions about a friends' dilemma (materials from McGregor et al., 2001).

Felt uncertainty and negative affect. The Felt Uncertainty scale contains 19 items drawn from the dissonance, ambivalence, and self-discrepancy literatures that target conflict-related discomfort*: mixed, uneasy, torn, bothered, preoccupied, confused, unsure of self or goals, contradictory, distractible, unclear, of two minds, muddled, restless, confused about identity, jumbled, uncomfortable, conflicted, indecisive, and chaotic*, $\alpha = .89$. The personal uncertainty manipulation described

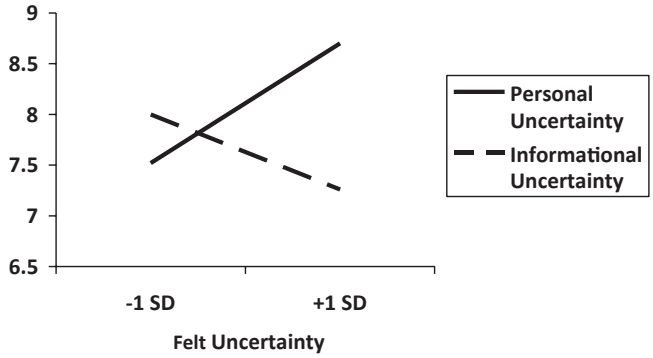

Fig. 4. Effect of experimentally manipulated personal uncertainty on extreme opinion conviction in Study 4.

above has significantly increased scores on this measure in past research (McGregor et al., 2001). This measure has never before been tested, however, as a possible moderator of extreme reactions to uncertainty threats. For comparison, the Negative Affect Scale (of the PANAS; Watson et al., 1988) assessed general and negative affect, $\alpha = .75$. On both measures participants rated each adjective or phrase on a scale from 1 (not at all) to 5 (extremely) with respect to how they felt at the moment.

Ideological conviction. Participants rated extremity of conviction for their opinions about capital punishment and abortion (as in McGregor & Marigold, 2003). For each issue, participants viewed a list of 14 diverse opinion statements from across the ideological spectrum, selected the single opinion they agreed with most, and then rated it on four questions that asked about firmness, strength, certainty, and willingness to defend the position in an argument. These four items across the two issues were averaged for an 8-item Conviction index, $\alpha = .90$.

Results and Discussion

For the main analysis we regressed Conviction on effect-coded Personal Uncertainty (Own Dilemma vs. Friend's Dilemma), mean-centered Felt Uncertainty, and the Personal Uncertainty × Felt Uncertainty interaction term (following the procedure advocated by Aiken & West, 1991). Results shown in Figure 4 depict the Personal Uncertainty × Felt Uncertainty interaction effect, $Beta = .31$, $t(69) = 2.78$, $p < .01$, with most extreme Conviction among participants in the Own Dilemma condition who reported the highest Felt Uncertainty. In contrast, Negative Affect did not significantly interact with the Personal Uncertainty manipulation to predict Conviction ($|t| < 1$; main effect of negative affect also

nonsignificant). Moreover, when Negative Affect and its interactions with the Personal Uncertainty manipulation were included in the regression equation, the Personal Uncertainty × Felt Uncertainty interaction remained significant, $t(67) = 3.99$, $p < .001$.

Simple effect analyses (conducted with the experimental variable dummy coded, as recommended by Aiken & West, 1991) within the Personal Uncertainty × Felt Uncertainty interaction revealed predicted values such that in the Own Dilemma (i.e., personal uncertainty) condition there was significantly more extreme Conviction among participants who reported feeling relatively high Felt Uncertainty ($y' = 8.70$) than among those who reported relatively low Felt Uncertainty ($y' = 7.52$), $Beta = .39$, $t(69) = 2.55$, $p = .01$. In contrast, in the Friend's Dilemma (i.e., informational uncertainty) condition there was a nonsignificant relation between Felt Uncertainty and Conviction extremity in the opposite direction, $Beta = –.25$, $t(69) = 1.45$, $p = .15$. Looking at the simple effects from another angle, among participants who reported feeling relatively high Felt Uncertainty there was significantly more extreme Conviction in the Own Dilemma condition ($y' = 8.70$) than in Friend's Dilemma condition ($y' = 7.26$), $Beta = .48$, $t(69) = 2.94$, $p < .01$. In contrast, however, among participants who reported feeling relatively low Felt Uncertainty here was no difference in extremity of Conviction between conditions, $Beta = –.16$, $t(69) = 1.01$, $p = .32$.

These results indicate that under circumstances of personal uncertainty (i.e., related to self-relevant, motivational conflict), felt uncertainty is the specific kind of negative affect that uniquely predicts ideological extremes. It is important to note that participants had viewed a list of 14 diverse opinions about the ideologically charged social issues just before rating conviction for them. Even with full awareness of diverse social opinions participants still endorsed extreme conviction ratings of almost 9 out of a possible score of 10.

Study 5

Study 5 was designed to conceptually replicate the results of Study 4 with a more behavioral form of lifestyle RAM. Lifestyle RAM should be associated with disinhibited and extreme outcomes because approach motivation and related constructs are associated with disinhibition, impulsivity, and risk-taking (Galinsky, Gruenfeld, & Magee, 2003; Knoch et al., 2006; Smillie & Jackson, 2006; Smillie et al., 2006; Suhr & Tsanadis, 2007; Zuckerman & Kuhlman, 2000; see also Hirsh et al., 2012). We used lifestyle RAM as the dependent variable in a retrospective correlational study about feelings and actions during a major goal impedance in real life—a prolonged labor dispute that disrupted university students' academic goals and put their school year in jeopardy. For the measure of lifestyle RAM, we assessed self-reported increases in eating, appearance change, use of alcohol, tobacco, and drugs, and relationship conflict and change).

Participants and Procedures

Data were retrospectively collected from students at the end of an academic year (in March) that had been disrupted by a strike for 11 weeks from November to January. Picket lines had obstructed undergraduates from getting to their classes and many classes had been cancelled. It had been uncertain how long the strike would persist, and whether the academic year might be lost completely. Affected undergraduates (254 women, 104 men) between the ages of 18 and 22 (age, $M =$ 20.17) completed a web survey that assessed recollections of uncertainty, negative affect, and the extent to which, during the strike, they had initiated changes in their appearance, eating, smoking, drinking, drug-taking, relationship conflict, and relationship status.

Materials

Felt uncertainty and negative affect. Participants rated the feelings they recalled having during the strike on the measures from Study 4 of Felt Uncertainty, $\alpha = .86$, and Negative Affect, $\alpha = 80$.

Lifestyle RAM. Participants' reported the extent to which, compared to their normal tendency, they changed their appearance (e.g., piercings, tattoos, hairstyles), ate more food, drank more alcohol, smoked more tobacco, used more illicit drugs, fought more in their relationships, and considered or made radical changes in their relationships. They made their ratings on a scale from 1 = *less than usual*, 2 = *same as usual*, 3 = *a little more than usual*, 4 = *more than usual*, to 5 = *a lot more than usual*. Ratings were averaged to create a composite index of Lifestyle RAM, $\alpha = .67$.

Participants could also choose a "not applicable" response if a particular item was not relevant to them. Not applicable responses were given by 17 participants for the eating item, 69 for the alcohol item, 182 for the smoking item, 170 for the drug-taking item, 2 for the relationship conflict item, and 1 for the relationship change item. Ratings across applicable scores were averaged to create a composite, cross-domain index of Lifestyle RAM. A subset of 188 participants considered all domains applicable and rated all items. Our primary analysis focused on this subset.

Covariates included to assess third-variable explanations. Participants indicated their gender and answered (1) three questions related to the extent to which they felt bored during the strike, (2) two questions related to the extent to which they remained presently distressed about the strike, (3) two questions about how much social contact relative to usual they had with friends and relationship partners during the strike, (4) two questions about loss of respect for their university due to

the strike, and (5) face-valid, single item measures of dispositional Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness.

Results and Discussion

The Lifestyle RAM, Felt Uncertainty, and Negative Affect scales had respective item means of 2.54, 3.51, and 3.61 out of 5. For the primary analysis, we regressed Lifestyle RAM on Felt Uncertainty and Negative Affect, along with the covariates.

Felt Uncertainty (and none of the covariates) significantly predicted Lifestyle RAM, $Beta = .27$, $t(173) = 2.53$, $p = .01$. Negative Affect did not, $Beta = .06$, $t(173) = 2.57$, $p = .57$. When this analysis was conducted on all participants, including those who rated some of the domains as not applicable, there was still a significant relation of Lifestyle RAM with Felt Uncertainty, $Beta = .15$, $t(384) = 1.96$, $p = .05$, but not with Negative Affect, $Beta = .02$, $t(384) < 1$. The specific effects for felt uncertainty but not for negative affect are consistent with the finding in Study 4 that felt uncertainty is specifically linked to RAM.

It should also be noted that the markers of lifestyle RAM in Study 5 were not intended to comprehensively represent all possible manifestations of RAM. For example, had we measured prosocial, public, or even trait-scale disinhibitions we would likely have detected an increase in them as well (as in Cavallo, Fitzsimmons, & Holmes, 2009; Galinsky et al., 2003; Van den Bos et al., 2009; Van den Bos et al., 2011). The relation between felt uncertainty and lifestyle RAM did not likely result from participants guessing the hypothesis and venting their frustration about the strike by exaggerating the extent to which it caused them to do unusual things. Such demand characteristics would presumably not be specific to felt uncertainty (they would also show up for negative affect). The results were also not due to third-variable confounds arising from boredom, residual distress, more frequent social contact, loss of institutional respect, or the dispositional covariates that we measured. None of the covariates significantly predicted lifestyle RAM.

General Discussion

The results of Studies 1–5 are consistent with the RAM view that uncertainty arising from motivational conflict spurs religious, idealistic, and behavioral extremes in order to mobilize sanguine, approach motivated states. In Studies 1–3 experimentally induced personal uncertainty about active goals caused various forms of RAM, and in Study 4 experimentally manipulated personal uncertainty interacted with felt-uncertainty to cause extreme conviction for opinions about capital punishment and abortion, even when negative affect was statistically controlled. Study 5, conducted in the context of a major goal disruption, found

similarly specific links between retrospectively reported felt-uncertainty, and lifestyle RAM.

The finding in Study 5 that lifestyle RAM was specifically predicted by uncertainty, just as ideological conviction was in Study 4, provides additional support for the goal-regulation account of reactive extremism and may help explain the appeal of the radical action agendas of extremist groups (Hogg & Adelman, 2013). Until now, the RAM account has been based primarily on evidence of extreme ideals, ideologies, and intentions after experimentally induced threats. The Study 5 findings provide converging goal-(dys)regulation evidence for more concrete forms of RAM. Together with other RAM findings, Study 5 is consistent with the observation that the extremes aroused by personal uncertainty do not need to be aggressive or interpersonally hostile (Proulx & Major, 2013). For relief from anxiety, any extreme will presumably do.

The results of Studies 1–5 consolidate more comprehensive support for the claim that uncertainty-related achievement, relationship, and mortality threats cause religious, ideological, and behavioral extremes to the extent that they confront people with motivational conflicts. The present research relied on self-report measures of approach motivation and anxiety, however. Future research should assess neural measures of RAM (e.g., left frontal asymmetry) and anxiety (e.g., magnitude of startle reactions) after manipulation of various forms of threat and during measurement of various forms of extremism. Doing so could more clearly reveal that extremes mediated by basic approach-motivated brain states function to relieve anxiety. This approach might be a particularly fruitful strategy for determining the extent to which the RAM view is consistent with meaning-making, compensatory control, and group-based interpretations of extremism (Hogg & Adelman, 2013; Kay & Eibach, 2013; Proulx & Major, 2013).

From the RAM perspective, external control threats and perceptual anomalies would signal that the terrain might not be conducive to goal pursuit, and anxiety would result. Restoration of external control, perceptual clarity, or group membership would relieve the eliciting anxiety by restoring the green-light for approach motivation either directly by one's own actions or vicariously through identification with potent groups. Future research should implicitly prime goals before external control or perceptual anomaly threats to see if compensatory reactions to these external uncertainty threats (i.e., discrepancies and randomness) are also amplified by goal pursuit. If so, meaning maintenance and compensatory control theories would fit compatibly with the goal-regulation assumptions of RAM theory.

Future research should also explore the potential for directing RAM reactions toward prosocial "extremes," even in the context of religious extremism. Uncertainty and religion are ubiquitous and if RAM reactions to uncertainty are as primitive and reflexive as we propose then managing extremism could benefit from efforts to orient and direct as well as mute religiously extreme

reactions. Compensatory control research (Shepherd, Kay, Landau, & Keefer, 2011) suggests the domain of compensatory reactions is constrained by primes that are salient in the threatening environment. Other research indicates that salient prosocial and religious norms can also prime people to react prosocially after uncertainty-related threats (Gailliot et al., 2008; Schumann et al., 2013). These findings suggest that counter-extremism efforts should focus on redirecting as well as muting extremism. Still, to the extent that RAM theory exposes the motivational foundation for uncertainty threat and defense processes, populations at risk for extremism might benefit from policies and programs that facilitate progress in basic achievement and relationship goals in life (Sheldon, Ryan, Deci, & Kasser, 2004). Indeed, in a previous study we found most reactive religious extremism among participants whose personal goals in life were frustrated (McGregor, Nash, & Prentice, 2010; see also Martin, 1999).

Social justice is a basic form of goal facilitation that could help mute the motivation for extremism (Fiske, 2013). People who are low in power are especially sensitive to the extent to which their goals are supported by just and reliable social systems (Laurin, Fitzsimons, & Kay, 2011). Fair treatment of new immigrants might go a long way to making them feel able to accomplish their goals in a welcoming society, and be therefore less inclined toward extremism as a lever for active and idealistic RAM (cf. Doosje, Loseman, & Van den Bos, 2013; Esses, Medianu, & Lawson, 2013).

Finally, RAM theory may help explain why expressing ones guiding values in life eliminates diverse defensive reactions and worldview extremes after various threats (e.g., McGregor et al., 2001; Schmeichel & Martens, 2005; Sherman & Cohen, 2006). Value affirmations may supplant defenses by preemptively activating approach motivation for the values (which, from a goal regulation perspective, are abstract goals that people promote/approach). Policies aimed at relieving motivation for extremism should accordingly support opportunities for prosocial value expression. One natural way to facilitate value expression might be to encourage identification and engagement with the values of prosocial groups and causes (e.g., ethnic, religious; cf. Hogg, 2012). Group affirmations can provide powerful immunity against the anxieties arising from more concrete goal conflicts (McGregor et al., 2005, Study 4; and perhaps especially groups with an empowered action agenda, see Hogg & Adelman, 2013). Indeed, giving participants the chance to write about meaningful ethnic and religious group memberships has eliminated outgroup derogation reactions to uncertainty just as effectively as affirming personal worth and values (McGregor, Haji, & Kang, 2008; see also Doosje et al., 2013 for a negative relation between ingroup identification and extremism). In at-risk populations, however, care would have to be taken to discourage jingoistic in-group superiority and status comparisons that could inflame extremism (Doosje et al., 2013).

References

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

Amodio, D. M., Shah, J. Y., Sigelman, H., Brazy, P. C., & Harmon-Jones, E. (2004). Implicit regulatory focus associated with asymmetrical frontal cortical activity. *Journal of Experimental Social Psychology*, *40*, 225–232. doi: 10.1016/S0022-1031(03)00100-8

Arndt, J., & Goldenberg, J. L. (2002). From threat to sweat: The role of physiological arousal in the motivation to maintain self-esteem. In A. Tesser, D. A. Stapel, and J. V. Wood (Eds.), *Self and motivation: Emerging psychological perspectives* (pp. 43–70). Washington, DC: American Psychological Association. doi: 10.1037/10448-002

Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Troetschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, *81*, 1014–1027. doi: 10.1037/0022-3514.81.6.1014

Burke, B. L., Martens, A., & Faucher, E. H. (2010). Two decades of terror management research: A meta-analysis of mortality salience research. *Personality and Social Psychology Review*, *14*, 155–195. doi: 10.1177/1088868309352321

Carver, C. S., & Harmon-Jones, E. (2009). Anger is an approach-related affect: Evidence and implications. *Psychological Bulletin*, *135*, 183–204. doi: 10.1177/1088868309352321

Cavallo, J. V., Fitzsimons, G. M., & Holmes, J. G. (2009). Taking chances in the face of threat: Romantic risk regulation and approach motivation. *Personality and Social Psychological Bulletin*, *35*, 737–751. doi: 10.1177/0146167209332742

DeWall, C. N., & Baumeister, R. F. (2007). From terror to joy: Automatic tuning to positive affective information following mortality salience. *Psychological Science*, *18*, 984–990. doi: 10.1111/j.1467–9280.2007.02013.x

Dodgson, P. G., & Wood, J. V. (1998). Self-Esteem and the cognitive accessibility of strengths and weaknesses after failure. *Journal of Personality and Social Psychology*, *75*, 178–197. doi: 10.1037/0022–3514.75.1.178

Doosje, B., Loseman, A. & Van den Bos, K. (2013). Determinants of radicalization of Islamic youth in the Netherlands: Personal uncertainty, perceived injustice, and perceived group threat. *Journal of Social Issues*, *69*, 586–604.

Elliot, A. J., & Devine, P. G. (1994). On the motivational nature of cognitive dissonance: Dissonance as psychological discomfort. *Journal of Personality and Social Psychology*, *67*, 382–394. doi: 10.1037/0022-3514.67.3.382

Esses, V. M., Medianu, S., & Lawson, A. S. (2013). Uncertainty, threat, and the role of the media in promoting the dehumanization of immigrants and refugees. *Journal of Social Issues*, *69*, 518–536.

Fiske, S. T. (2013). A millennial challenge: Extremism in uncertain times. *Journal of Social Issues*, *69*, 605–613.

Fox, N. A., & Davidson, R. J. (1986). Taste elicited changes in facial signs of emotion and the asymmetry of brain electrical activity in human newborns. *Neuropsychologia*, *24*, 417–422. doi: 10.1016/0028-3932(86)90028-X

Gable, S. L. (2006). Approach and avoidance social motives and goals. *Journal of Personality*, *74*, 175–222. doi: 10.1111/j.1467-6494.2005.00373.x

Gailliot, M. T., Stillman, T. F., Schmeichel, B. J., Maner, J. K., & Plant, A. (2008). Mortality salience increases adherence to salient norms and values. *Personality and Social Psychology Bulletin*, *34*, 993–1003.

Galinsky, A. D., Gruenfeld, D. H., & Magee, J. C. (2003). From power to action. *Journal of Personality and Social Psychology*, *85*, 453–466. doi: 10.1037/0022-3514.85.3.453

Gray, J. A., & McNaughton, N. (2000). *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system*. New York: Oxford University Press.

Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 61–139). San Diego, CA: Academic Press. doi: 10.1016/S0065-2601(08)60016-7

Haas, I. J., & Cunningham, W. A. (2013). The uncertainty paradox: Perceived threat moderates the effect of uncertainty on political tolerance. *Political Psychology*. doi: 10.1111/pops.12035

Harmon-Jones, E., Amodio, D. M., Harmon-Jones, C. (2009). Action-based model of dissonance: A review, integration, and expansion of conceptions of cognitive conflict. In M. P. Zanna (Ed.) *Advances in experimental social psychology* (Vol. 41, pp. 119–166). Burlington, MA: Academic Press. doi: 10.1016/S0065-2601(08)00403-6

Heine, S. J., Proulx, T., & Vohs, K. D. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review*, *10*, 88–110. doi: 10.1207/s15327957pspr1002_1

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, *52*, 1280–1300. doi: 10.1037/0003-066X.52.12.1280

Hirsh, J. B., Mar, R. A., & Peterson, J. B. (2012). Psychological entropy: A framework for understanding uncertainty-related anxiety. *Psychological Review*, *119*, 304–320. doi: 10.1037/a0026767

Hogg, M. A. (2012). Uncertainty-identity theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 62–80). Thousand Oaks, CA: Sage. doi: 10.1016/S0065-2601(06)39002-8

Hogg, M. A., & Adelman, J. (2013). Uncertainty-identity theory: Extreme groups, radical behavior, and authoritarian leadership. *Journal of Social Issues*, *69*, 436–454.

Kay, A. C., & Eibach, R. P. (2013). Compensatory control and its implications for ideological extremism. *Journal of Social Issues*, *69*, 564–585.

Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, *110*, 265–284. doi: 10.1037/0033-295X.110.2.265

Klein, K. M., & Kruglanski, A. W. (2013). Commitment and extremism: A goal systemic analysis. *Journal of Social Issues*, *69*, 419–435.

Knoch, D., Gianotti, L. R. R., Pascual-Leone, A., Treyer, V., Regard, M., Hohmann, M., & Brugger, P. (2006). Disruption of right prefrontal cortex by low-frequency repetitive transcranial magnetic stimulation induces risk-taking behavior. *Journal of Neuroscience*, *26*, 6469–6472. doi: 10.1523/JNEUROSCI.0804-06.2006

Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases*. New York: Plenum Press.

Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y., & Sleeth-Keppler, D. (2002). A theory of goal systems. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. 331–378). San Diego, CA: Academic Press. doi.org/10.1016/S0065-2601(02)80008-9

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

Little, B. R. (1983). Personal projects: A rationale and method for investigation. *Environment and Behavior*, *15*, 273–309. doi: 10.1177/0013916583153002

Marigold, D. C., McGregor, I., & Zanna, M. P. (2010). Defensive conviction as emotion regulation: Goal mechanisms and relationship implications. In R. M. Arkin, K. C. Oleson, & P. J. Carroll (Eds.). *The uncertain self: A handbook of perspectives from social and personality psychology* (pp. 232–248). Mahwah, NJ: Lawrence Erlbaum Associates.

Martin, L. L. (1999). I-D compensation theory: Some implications of trying to satisfy immediate-return needs in a delayed-return culture. *Psychological Inquiry*, *10*, 195–209.

McGregor, I. (2006). Offensive defensiveness: Toward an integrative neuroscience of compensatory zeal after mortality salience, personal uncertainty, and other poignant self-threats. *Psychological Inquiry*, *17*, 299–308. doi: 10.1080/10478400701366977

McGregor, I., Gailliot, M. T., Vasquez, N. A., & Nash, K. A. (2007). Ideological and personal zeal reactions to threat among people with high self-esteem: Motivated promotion focus. *Personality and Social Psychology Bulletin*, *33*, 1587–1599. doi: 10.1177/0146167207306280

McGregor, I., Haji, R., & Kang, S-J. (2008). Can ingroup affirmation relieve outgroup derogation? *Journal of Experimental Social Psychology*, *44*, 1395–1401. doi: 10.1016/j.jesp.2008.06.001

McGregor, I., Haji, R., Nash, K. A., & Teper, R. (2008). Religious zeal and the uncertain self. *Basic and Applied Social Psychology*, *30*, 183–188. doi: 10.1080/01973530802209251

McGregor, I., & Jordan, C. H. (2007). The mask of zeal: Low implicit self-esteem, threat, and defensive extremism. *Self and Identity*, *6*, 223–237. doi: 10.1080/15298860601115351

McGregor, I., & Marigold, D. C. (2003). Defensive zeal and the uncertain self: What makes you so sure? *Journal of Personality and Social Psychology*, *85*, 838–852. doi: 10.1037/0022-3514.85.5.838

McGregor, I., Nail, P. R., Marigold, D. C., & Kang, S.-J. (2005). Defensive pride and consensus: Strength in imaginary numbers. *Journal of Personality and Social Psychology*, *89*, 978–996. doi: 10.1037/0022-3514.89.6.978

McGregor, I. Nash, K. A., Mann, N., & Phills, C. (2010). Anxious uncertainty and reactive approach motivation (RAM). *Journal of Personality and Social Psychology*, *99*, 133–147. doi: 10.1037/a0019701

McGregor, I., Nash, K., & Inzlicht, M. (2009). Threat, high self-esteem, and reactive approach motivation: Electroencephalographic evidence. *Journal of Experimental Social Psychology*, *45*, 1003–1007. doi: 10.1016/j.jesp.2009.04.011

McGregor, I., Nash, K., & Prentice, M. (2010). Reactive approach motivation (RAM) for religion. *Journal of Personality and Social Psychology*, *99*, 148–161. doi: 10.1037/a0019702

McGregor, I., Prentice, M., & Nash, K. (2009). Personal uncertainty management by reactive approach motivation. *Psychological Inquiry*, *20*, 225–229. doi: 10.1080/10478400903333460

McGregor, I., Zanna, M. P., Holmes, J. G., & Spencer, S. J. (2001). Compensatory conviction in the face of personal uncertainty: Going to extremes and being oneself. *Journal of Personality and Social Psychology*, *80*, 472–488. doi: 10.1037/0022-3514.80.3.472

Nash, K., Inzlicht, M., & McGregor, I. (2012). Approach-related left prefrontal EEG asymmetry predicts muted error-related negativity. *Biological Psychology*, *91*, 96–102. doi: 10.1016/j.biopsycho.2012.05.005

Nash, K., McGregor, I., & Inzlicht, M. (2010). Line bisection as a neural marker of approach motivation. *Psychophysiology*, *47*, 979–998. doi: 10.1111/j.1469-8986.2010.00999.x

Nash, K., McGregor, I., & Prentice, M. (2011). Threat and defense as goal regulation: From implicit goal conflict to anxious uncertainty, reactive approach motivation, and ideological extremism. *Journal of Personality and Social Psychology*, *101*, 1291–1301. doi: 10.1037/a0025944

Petty, R. E., Briñol, P., & Tormala, Z. L. (2002). Thought confidence as a determinant of persuasion: The self–validation hypothesis. *Journal of Personality and Social Psychology*, *82*, 722–741. doi: 10.1037/0022-3514.82.5.722

Proulx, T., Inzlicht, M., & Harmon-Jones, E. (2012). Understanding all inconsistency compensation as a palliative response to violated expectations. *Trends in Cognitive Sciences*, *16*, 285–291. doi: 10.1016/j.tics.2012.04.002

Proulx, T., & Major, B. (2013). A raw deal: Heightened liberalism following exposure to anomalous playing cards. *Journal of Social Issues*, *69*, 455–472.

Pyszczynski, T., Greenberg, J., & Solomon, S. (1999). A dual-process model of defense against conscious and unconscious death-related thoughts: An extension of terror management theory. *Psychological Review*, *106*, 835–845. doi: 10.1037/0033-295X.106.4.835

Pyszczynski, T., Greenberg, J., Solomon, S., & Maxfield, M. A. (2006). On the unique psychological import of death: Theme and variations. *Psychological Inquiry*, *17*, 328–356. doi:10.1080/10478400701369542

Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T., & Lyon, D. (1989). Evidence for terror management theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology*, *57*, 681–690. doi: 10.1037/0022-3514.58.2.308

Schmeichel, B. J., Gailliot, M. T., Filardo, E-A., McGregor, I., Gitter, S., & Baumeister, R. F. (2009). Terror management theory and self-esteem revisited: The roles of implicit and explicit self-esteem in mortality salience effects. *Journal of Personality and Social Psychology*, *96*, 1077–1087. doi: 10.1037/a0015091

Schmeichel, B. J., & Martens, A. (2005). Self-affirmation and mortality salience: Affirming values reduces worldview defense and death-thought accessibility. *Personality and Social Psychology Bulletin*, *31*, 658–667. doi: 10.1177/0146167204271567

Schumann, K., McGregor, I., Nash, K., & Ross, M. (2013). *Religious magnanimity: When do diverse religious belief systems inspire forbearance?* Unpublished Manuscript, Palo Alto, CA: Stanford University.

Sheldon, K. M., Ryan, R., Deci, E., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, *30*, 475–486. doi: 10.1177/0146167203261883

Shepherd, S., Kay, A. C., Landau, M. J., & Keefer, L. A. (2011). Evidence for the specificity of control motivations in worldview defense: Distinguishing compensatory control from uncertainty management and terror management processes. *Journal of Experimental Social Psychology*, *47*, 949–958. doi: 10.1016/j.jesp.2011.03.026

Sherman, D. K., & Cohen, G. L. (2006). The psychology of self-defense: Self-affirmation theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp. 183–242). San Diego, CA: Academic Press.

Smillie, L., & Jackson, C. (2006). Functional impulsivity and reinforcement sensitivity theory. *Journal of Personality*, *74*, 47–83. doi: 10.1111/j.1467-6494.2005.00369.x

Smillie, L. D., Jackson, C. J., & Dalgleish, L. I. (2006). Conceptual distinctions among Carver and White's (1994) BAS scales: A reward-reactivity versus trait impulsivity perspective. *Personality and Individual Differences*, *40*, 1039–1105. doi: 10.1016/j.paid.2005.10.012

Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, *89*, 845–851. doi: 10.1037/0022-3514.89.6.845

Suhr, J. A., & Tsanadis, J. (2007). Affect and personality correlates of the Iowa Gambling Task. *Personality and Individual Differences*, *43*, 27–36. doi: 10.1016/j.paid.2006.11.004

Van den Bos, K. (2001). Uncertainty management: The influence of uncertainty salience on reactions to perceived procedural fairness. *Journal of Personality and Social Psychology*, *80*, 931–941.

Van den Bos, K. (2009). Making sense of life: The existential self trying to deal with personal uncertainty. *Psychological Inquiry*, *20*, 197–217. doi: 10.1080/10478400903333411

Van den Bos, K., Muller, P. A., & Van Bussel, A. A. L. (2009). Helping to overcome intervention inertia in bystander's dilemmas: Behavioral disinhibition can improve the greater good. *Journal of Experimental Social Psychology*, *45*, 873–878. doi: 10.1016/j.jesp.2009.03.014

Van den Bos, K., Poortvliet, P. M., Maas, M., Miedema, J., & Van den Ham, E.-J. (2005). An enquiry concerning the principles of cultural norms and values: The impact of uncertainty and mortality salience on reactions to violations and bolstering of cultural worldviews. *Journal of Experimental Social Psychology*, *41*, 91–113. doi: 10.1016/j.jesp.2004.06.001

Van den Bos, K., Van Lange, P. A. M., Lind, E. A., Venhoeven, L. A., Beudeker, D. A., Cramwinckel, F. M., Smulders, L., & Van der Laan, J. (2011). On the benign qualities of behavioral disinhibition: Because of the prosocial nature of people, behavioral disinhibition can weaken pleasure with getting more than you deserve. *Journal of Personality and Social Psychology*, *101*, 791–811. doi: 10.1037/a0023556

Van Harreveld, F., Rutjens, B. T., Rotteveel, M., Nordgren, L. F., & Van der Pligt, J. (2009). Ambivalence and decisional conflict as a cause of psychological discomfort: Feeling tense before jumping off the fence. *Journal of Experimental Social Psychology*, *45*, 167–173. doi: 10.1016/j.jesp.2008.08.015

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*, 1063–1070. doi: 10.1037/0022-3514.54.6.1063

Weary, G., Jacobson, J. A., Edwards, J. A., & Tobin, S. J. (2001). Chronic and temporarily activated causal uncertainty beliefs and stereotype usage. *Journal of Personality and Social Psychology*, *81*, 206–219. doi: 10.1037/0022-3514.81.2.206

Wichman, A. L., Brunner, R. P., & Weary, G. (2008). Immediate and delayed effects of causal uncertainty inductions on uncertainty accessibility. *Journal of Experimental Social Psychology*, *44*, 1106–1113. doi: 10.1016/j.jesp.2007.12.002

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality*, *68*, 999–1029. doi: 10.1111/1467-6494.00124

IAN MCGREGOR received his MA in Personality Psychology from Carleton University and his PhD in Social Psychology from the University of Waterloo. He is currently a Professor of Psychology in the Faculty of Health at York University in Canada. His research is funded by the Social Sciences and Humanities Research Council of Canada and he is an editorial board member for the *Journal of Personality and Social Psychology*, the *Journal of Experimental Social Psychology*, *Social Psychological and Personality Science*, and the *European Journal of Social Psychology*.

MIKE PRENTICE earned his MA in Social-Personality Psychology with supervision from Ian McGregor at York University, and is now a psychology instructor at Knox College and a PhD student at the University of Missouri. Mike's eclectic interests and areas of methodological expertise span a wide range of topics in psychology, including existential, developmental, personality, social, and neural.

KYLE NASH earned his MA and PhD at York University under the supervision of Ian McGregor. His dissertation focused on motivational and neural mechanics of anxiety, reactive approach-motivation, and risk-taking. In 2012 he began a postdoctoral position in the Psychology Department at the University of Basel, in Switzerland, to further investigate neural processes related to self-regulation and risk-taking.