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Ideological and Personal Zeal Reactions to Threat
Among People With High Self-Esteem:
Motivated Promotion Focus

Ideological and Personal Zeal Reactions to Threat Among People With High Self-Esteem: Motivated Promotion Focus

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After a mortality salience manipulation, participants completed measures of either ideological zeal (Study 1) or personal project zeal (Study 3). Mortality salience increased both kinds of zeal but only among participants with high self-esteem. High self-esteem was positively correlated with dispositional tendencies toward promotion focus, action orientation, and behavioral activation; it was negatively correlated with behavioral inhibition and rumination (Study 2). These findings clarify the role of dispositional self-esteem in mortality salience research and confirm that, as has been found with various other threats, zealous reactions to mortality salience are most pronounced among participants with high self-esteem. Results support a regulatory focus perspective on zealous reactions to threat. Ideological and personal zeal reflect motivated promotion focus reactions that are rewarding because they decrease the motivational relevance, regulatory fit, and subjective salience of threats.

Keywords: *mortality salience; self-esteem; ideology; personal projects; zeal; promotion focus*

The term *zeal* came into common use two thousand years ago in reference to a group of determined Zealots whose members hid daggers under their cloaks and stabbed others who disagreed with their ideals. Accordingly, people now use the term *zeal* to refer to determined conviction for an idealistic cause that craves

consensus and is intolerant of dissent. Zeal is powerful. It perennially fuels commitment to idealistic extremes that are construed as noble by advocates and as antisocial by others. As a recent example, the Al-Qaeda attacks of September 11th, 2001, were fueled by the terrorists' zeal, and the United States's militant reaction was arguably as zealous (McGregor, Nail, Marigold, & Kang, 2005; Pyszczynski et al., 2006). This research illuminates a basic goal-regulation process that can account for why people tend to be attracted to elements of zeal, especially after experiencing threats. In doing so it clarifies the controversial role of self-esteem as a moderator of zealous reactions to mortality salience. Most importantly, it supports a new, integrative understanding of theoretically estranged but empirically compatible research findings on zealous reactions to mortality salience and other threats.

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ZEAL APPEAL

Why do people go to extremes? In his classic, *The Varieties of Religious Experience*, James (1902/1958) concluded that “religious rapture” and “moral enthusiasm” are “unifying states of mind in which the sand and grit of selfhood incline to disappear” (p. 240). His conclusions were based on the zealous testimonials of born-again Christians who reported “a general feeling of buoyancy” (p. 222); being “amazed at my increased energy and vigor of mind” (p. 164); “fear is one of the things eliminated” (p. 165); “soaring on the wings of faith, freed from the chains of death and darkness” (p. 193). The common theme is that the newfound zeal allowed converts to transcend their everyday problems and persevere at their goals with courage. A few years after James’s seminal book, Freud extended James’s ideas and explicitly proposed that people cling to “excessively intense,” “supervalent” beliefs because doing so effectively represses other distressing thoughts and feelings (Gay, 1989, p. 200).

The best empirical support for the idea that zeal is a strategic reaction to help quell distressing thoughts comes from 20 years of Terror Management Theory research that has shown mortality salience to cause various kinds of zealous reactions (see Greenberg, Solomon, & Pyszczynski, 1997; Solomon, Greenberg, & Pyszczynski, 2004, for reviews). For example, thinking about personal death reliably causes people to react with jingoism, intergroup bias, and derogation of people who criticize or offend their values and worldviews. These kinds of ideological zeal reactions are not specific to the threat of death, however. Threats of personal uncertainty, failure, loss of control, loneliness, attachment separation, insecurity, meaninglessness, system injustice, and cognitive dissonance have been shown by other researchers to activate the same kinds of zealous reactions as are triggered by mortality salience (see McGregor, 2006b, for a review). Even grappling with a difficult statistics problem has been found to cause undergraduate psychology students to reactively endorse ideological extremes and exaggerate social consensus for their value-laden opinions about capital punishment, abortion, suicide bombing, and the United States’s invasion of Iraq (McGregor & Jordan, 2007; McGregor et al., 2005). One study even found that this statistics threat, as compared to an easy statistics exercise, caused male psychology students to claim more objective truth for their religious beliefs and to report more willingness to support a war that defended their religious beliefs (McGregor & Haji, 2007). Thus, it is now amply clear that various threats cause idealistic zeal.

It is also clear that zeal helps people cope with their troubles. Research from different theoretical traditions converges on the conclusion that zeal insulates people from preoccupation with threats even if the zeal is remote

from the domain of the threat. For example, expressing worldview zeal after mortality salience makes people less likely to complete wordstems, such as *coff_*, with death-related completions, such as *coffin* (Greenberg, Arndt, Schimel, Pyszczynski, & Solomon, 2001; Pyszczynski, Greenberg, & Solomon, 1999). Similarly, affirming cherished personal values decreases rumination about unrelated failures (Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999) and decreases felt distress over unrelated personal dilemmas (McGregor, Zanna, Holmes, & Spencer, 2001, Study 1). Along the same lines, writing about cherished values (McGregor, 2006c), convictions (McGregor & Marigold, 2003, Study 4), consensual ingroups (McGregor et al., 2005, Study 4), or even passionate romantic experiences (McGregor, 2004, p. 192; see also McGregor, 2007) has been found to insulate people from concern with their troubling failures and dilemmas. This well replicated insulation effect of various aspects of zeal does not operate by distraction from the threat. The threat salience–reducing effects of zeal persist even if participants are repeatedly reminded of the threat right before the assessment of threat salience (McGregor, 2006c). How, then, does expressing zeal alleviate concern with unrelated threats?

We propose an explanation for how various aspects of zeal so effectively shield people from threats that is derived from studies on promotion and prevention modes of regulatory focus. Promotion focus and prevention focus are perceptual orientations that are related to approach and avoidance motivation processes, respectively (Amodio, Shah, Sigelman, Brazy, & Harmon-Jones, 2004; Higgins, 1997). Approach motivation guides behavior toward desirable prospects; avoidance motivation guides behavior away from undesirable prospects (Elliot & Thrash, 2002). There is considerable evidence that promotion or approach and prevention or avoidance systems are functionally and neuroanatomically distinct (Elliot & Thrash, 2002; Gray & McNaughton, 2000; Sutton & Davidson, 1997) and even that activation of one system can suppress activation of the other (Amodio et al., 2004; Jackson et al., 2003). Accordingly, stimuli loom largest, experientially, when regulatory focus matches the motivational relevance of the stimulus—a person-by-stimulus configuration called “regulatory fit” (Higgins, 2005). We propose that idealistic zeal is appealing in the face of threats because it activates a promotion focus that decreases the regulatory fit and felt urgency of distressing thoughts (Higgins, 1996, 1997; McGregor, 2006c; cf. Tomarken & Keener, 1998).

THIS RESEARCH

We investigate our promotion focus account in the context of zealous reactions to mortality salience. In

Study 1 we tested the prediction that ideological zeal reactions to mortality salience should be most pronounced among people with high self-esteem (as is the case after other threats; e.g., [McGregor, 2006b](#); [McGregor & Marigold, 2003](#)). High self-esteem is related to a tendency toward approach-motivated personal goals ([Heimpel, Elliot, & Wood, 2006](#)). We postulated that this may be because a core, defining feature of self-esteem is that it reflects a dispositional tendency toward self-promotion, promotion focus, and approach motivation ([Baumeister, Tice, & Hutton, 1989](#); [Leonardelli, Lakin, & Arkin, in press](#)). In Study 2 we directly assessed correlations between self-esteem and an array of dispositional measures related to promotion focus.

In Study 3 we assessed whether people with high self-esteem will also exaggerate zeal about their idiosyncratic personal projects after mortality salience. Personal project zeal is the tendency to become more idealistic and more eagerly determined to succeed at one's current life goals. This new dependent variable allowed us to assess our main hypothesis—that ideological zeal reflects exaggerated promotion focus—in two ways. First, we assessed whether the idealistic and basic promotion-focused aspects of personal projects hang together in a single factor from a principal components analysis. Such a finding would be consistent with theories of goal regulation, which posit that abstract ideals guide promotion focus ([Higgins, 1996](#); cf. [Carver & Scheier, 1998](#)). Second, the proposed link between idealistic zeal and promotion focus would be supported if after mortality salience participants with high self-esteem are found to similarly exaggerate both the idealistic and basic promotion focused aspects of their personal projects.

STUDY 1

Terror management theory has proposed that ideological zeal reactions to mortality salience threats should be least evident among people with high self-esteem because high self-esteem should provide protection against terrifying death thoughts ([Greenberg et al., 1997](#); [Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004](#)). Accordingly, one experiment found that after mortality salience there was less relative derogation of an ideological critic among participants with higher than moderate self-esteem ([Harmon-Jones et al., 1997, Study 2](#)). In contrast to this highly cited, solitary finding, however, the most zealous and self-promoting reactions to other threats have repeatedly been found among individuals with high rather than low self-esteem. For instance, people with high self-esteem are particularly inclined to derogate out-group members after receiving negative feedback ([Crocker, Thompson, McGraw, & Ingerman,](#)

[1987](#)), to make self-serving judgments about others' intelligence after an ego-threat ([Beauregard & Dunning, 1998](#)), to disidentify with threatened aspects of personal identity ([Mussweiler, Gabriel, & Bodenhausen, 2000](#)), and to become zealous about value-laden opinions and ideologies in the face of unrelated personal uncertainties and vulnerabilities ([McGregor & Marigold, 2003](#); [McGregor et al., 2005](#)).

This common finding that the most zealous reactions to threats occur among participants with high self-esteem is consistent with the result of the one published experiment, other than the one described above by [Harmon-Jones et al. \(1997, Study 2\)](#), to assess the role of self-esteem as a moderator of zealous reactions to mortality salience. In that one other study, [Baldwin and Wesley \(1996\)](#) found most zealous reactions to mortality salience among people with high self-esteem. Specifically, personal reflections on mortality caused Canadian participants with high but not low self-esteem to react with heightened disdain for an author who criticized Canada ([Baldwin & Wesley, 1996](#)). The discrepancy between this finding and that of [Harmon-Jones et al.](#) has given rise to uncertainty about the role of self-esteem as a moderator of mortality-salience effects: "Inconsistency in the literature suggests some caution regarding the relationship between dispositional self-esteem and responses to MS [mortality salience]" ([Pyszczynski et al., 2004, p. 439](#)).¹

This uncertainty may have arisen from the exceptional measure of self-esteem used in the [Harmon-Jones et al. \(1997\)](#) study, which makes it difficult to compare their findings with those in the threat literature more generally. Specifically, in the study by [Harmon-Jones et al.](#), the high self-esteem sample included only participants who had been preselected for having the very highest self-esteem scores ([Rosenberg, 1965](#)) in a mass-testing population and retained only if the scores remained extremely high weeks later when the participants came in to the lab to complete the experiment. Thus, the high self-esteem group had extremely high self-esteem ($M = 38.4/40$) that was also stable. Temporally stable high self-esteem is a unique subset of high self-esteem that has proven particularly nondefensive in past research. In contrast, individuals with high but unstable self-esteem are particularly defensive (see [Kernis, 2003](#), for a review of this and related research). Thus, the results cannot be easily compared with those from other experiments that have typically investigated how the whole range of once-assessed dispositional self-esteem moderates zealous reactions to threats. The [Harmon-Jones et al.](#) measure may arguably be a superior way to operationalize the construct of true, unwaveringly confident self-esteem (cf. [Kernis, 2003](#)) but it is not amenable to integration with the literature on the role of dispositional self-esteem and reactions to threat.

To enable integrative theorizing about how and why the most common measure of self-esteem moderates zealous reactions to threats, Study 1 assesses how the full range of once-assessed self-esteem scores moderates the effects of mortality salience on zeal. We expected that, as with other threats, zealous reactions to mortality salience would be most pronounced among participants with high self-esteem. High self-esteem has been linked to the tendency to pursue a higher proportion of approach-related than avoidance-related personal goals (Heimpel et al., 2006). We wondered whether this might be because high self-esteem reflects a dispositional tendency toward promotion focus and approach motivation (as suggested by Heimpel et al., 2006, and as we assess in Study 2). In Study 1, after being randomly assigned to write about their own death or a more mundane unpleasant topic, American participants rated their liking for two essays and authors that either praised or criticized the United States. Relative derogation of the critical essay and author was taken as the measure of ideological zeal (as in Harmon-Jones et al., 1997, Study 2). We expected highest ideological zeal among participants with high self-esteem in the mortality-salience condition.

Method

Thirty-two American undergraduate students (20 women) from an introductory psychology course completed the Rosenberg Self-Esteem scale (Rosenberg, 1965) during a mass testing session at the beginning of the academic semester. The Rosenberg questionnaire contained 10 items (e.g., “I take a positive attitude toward myself”) that were answered on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Mean self-esteem in our sample (40.0) was similar to that found in a meta-analysis of North-American self-esteem scores ($M = 39.6$; Heine, Lehman, Markus, & Kitayama, 1999). Possible scale values ranged from 10 to 50 but 94% of scores were above the theoretical midpoint of the scale (93% of scores were similarly above the scale midpoint in the meta-analysis by Heine et al., 1999). The standard deviation of scores in this sample was .56, and the Cronbach’s α reliability was .80.

Approximately 2 weeks after completing the self-esteem questionnaire, participants came to the laboratory and completed the main phase of the experiment. They received a packet of written instructions and materials and worked through it at their own pace. They first completed the mortality salience manipulation. Those in the mortality salience condition described the emotions that the thought of their own death aroused in them and their thoughts about what will happen to their bodies as they physically die (this is the most commonly used mortality salience manipulation; Solomon et al., 2004). Those in the

dental pain control condition answered similar questions about dental pain during a typical visit to the dentist. This dental pain control condition is the most commonly used control condition in mortality salience research, and it does not cause zealous reactions (Solomon et al., 2004; see our general discussion for further explanation of why dental pain is an appropriate control condition). Mortality salience has been found to cause zealous reactions only after a delay or distraction (see Pyszczynski et al., 1999). To provide such a delay in this experiment, participants next completed a filler questionnaire that took approximately 5 minutes.

Finally, participants completed the main dependent measure of ideological zeal. They read two counterbalanced, handwritten essays about the United States: one that praised the United States and Americans and the other that criticized the United States and Americans. Participants evaluated the truth and validity of each essay and the likeability, intelligence, and knowledgeability of each author using a scale from 1 (*not at all*) to 9 (*extremely*). We used the mean evaluation of each essay and author to measure favorability toward ideologically consistent and ideologically inconsistent opinions, respectively. In accordance with a standard practice in mortality salience research (Greenberg et al., 1997), we used the difference between the two evaluations to assess relative derogation of the ideological critic (see rationale for difference scores by Colvin, Block, & Funder, 1996). This measure of relative derogation of the ideological critic served as the main measure of ideological zeal. We also conducted more detailed analyses to assess the extent to which the effect was because of derogation of the ideological critic or favorability toward the ideological supporter.

Results²

To examine the relationships between mortality salience, self-esteem, and ideological zeal, we regressed ideological zeal scores on centered self-esteem scores, effect-coded condition (mortality salience vs. dental pain), and their interaction. Following the procedure advocated by West, Aiken, and Krull (1996), all terms were entered and interpreted simultaneously. Results indicated a significant effect of mortality salience ($\beta = .32, t = 2.22, p < .05$). As usual, writing about death caused increased ideological zeal as compared to writing about dental pain. The effect of self-esteem was also significant, $\beta = .46, t = 3.23, p < .005$, with high self-esteem being associated with more ideological zeal. Of primary importance, the analysis indicated a significant interaction between self-esteem and condition ($\beta = .38, t = 2.65, p = .01$), with highest ideological zeal at high self-esteem in the mortality salience condition (see Figure 1).

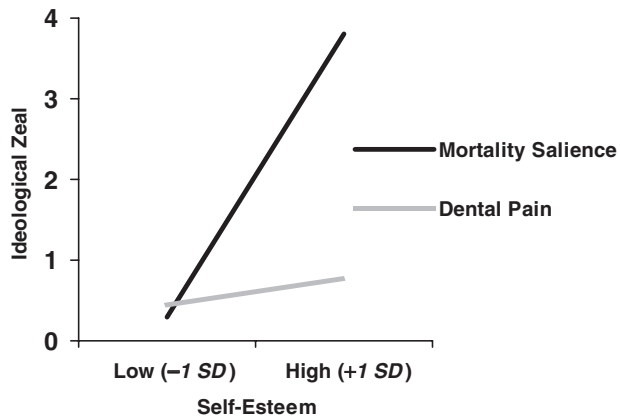


Figure 1 Ideological zeal as a function of self-esteem and mortality salience in Study 1.

To interpret the interaction, we assessed the simple effects of mortality salience among participants who were relatively high versus low in self-esteem (i.e., at 1 *SD* above and below the mean on the self-esteem scale, respectively; following West et al., 1996). As predicted, mortality salience increased ideological zeal among participants who were high in self-esteem, $\beta = .70$, $t = 3.37$, $p < .01$, but not among those low in self-esteem, $t < 1$, *ns*. Separate, finer grained analyses of the pro- and anti-United States evaluations indicated that evaluations of the pro-United States essay and author ($M = 5.89$) were not affected by the interaction of mortality salience and self-esteem ($t < 1$). Only evaluations of the anti-United States essay and author were significantly predicted by the interaction of mortality salience and self-esteem ($\beta = .56$, $t = 3.82$, $p < .001$). Moreover, this interaction effect on derogation of the anti-United States evaluations remained similarly significant even when anti-United States evaluations were residualized on pro-United States evaluations before the analysis ($\beta = .53$, $t = 3.75$, $p < .001$). It is clear, therefore, that the effect was driven by derogation of the ideological critic. At high esteem in the dental pain condition, the predicted value of mean favorability toward the anti-United States essay and author was 5.48, but it dropped to 2.83 in the mortality salience condition (recall that the favorability scale ranged from 1 = *not at all* to 9 = *extremely*). At low self-esteem the predicted values were not significantly different across the dental (predicted value = 4.48) and mortality (predicted value = 5.53) conditions.

It is noteworthy that this relative derogation effect replicates the finding from the only previous study assessing how the full range of self-esteem scores interacts with mortality salience. In that study, following mortality salience, participants with high self-esteem became more derogatory toward ideological transgressors but did not become more favorable toward an

ideological supporter (Baldwin & Wesley, 1996; see also McGregor et al., 2005, Study 3, for the same specific relative derogation reaction by the proudest of participants after a social threat).

Discussion

These results indicate that high trait self-esteem is associated with the most pronounced ideological zeal reactions to mortality salience, as has been consistently found after other threats (see McGregor, 2006b, for a review). The specificity for derogation of the ideological critic is also consistent with previous findings showing that, after mortality salience and other threats, participants with high self-esteem tend toward exaggerated derogation of ideological critics but not toward exaggerated solidarity with ideological supporters (Baldwin & Wesley, 1996; McGregor et al., 2005, Study 3). This more belligerent than support-seeking tendency of high self-esteem individuals may reflect their willingness to engage in antagonistic, self-promoting reactions to threats, as compared to the more cautious, security-seeking tendencies of participants with low self-esteem (Heatherton & Vohs, 2000; Vohs & Heatherton, 2001). The finding that the reactive zeal was driven by hostility to critics is consistent with the historical and empirical links between idealistic zeal and hostility (Mullen & Skitka, 2006). It is also consistent with recent neuropsychological evidence showing that anger and hostility are linked to the promotion focus and approach motivation system (Harmon-Jones, 2003; Harmon-Jones, Vaughn-Scott, Mohr, Sigelman, & Harmon-Jones, 2004), which we propose is fundamental to zeal.

We wondered whether the self-promotional tendencies of high self-esteem individuals might hold the key to a deeper understanding of why they can sometimes get offensive when threatened (McGregor, 2006b; e.g., Heatherton & Vohs, 2000, found that after threats participants with high self-esteem were rated by their peers as becoming more arrogant and obnoxious). As we expected and assessed more directly in Study 3, if ideological zeal reflects basic promotion-focused goal regulation processes, then it should be most pronounced among individuals who tend toward promotion focus. Study 2 comprehensively assesses whether self-esteem is associated with dispositional promotion focus.

STUDY 2

Why is high self-esteem related to strong ideological zeal reactions to threats, whether those threats are related to vulnerability arising from mortality, failure, uncertainty, or rejection? We wondered whether it

might be because both self-esteem and ideological zeal reflect a self-regulatory tendency toward promotion focus, especially in the face of threat. Promotion focus heightens sensitivity to approach-motivation-related stimuli, strategies, and outcomes and an eager orientation toward ideals and incentives. In contrast, prevention focus heightens sensitivity to avoidance-motivation-related stimuli, strategies, and outcomes and a vigilant orientation toward responsibilities and security (Higgins, 1997). Study 2 investigates links between self-esteem and promotion focus. Past research has found that promotion- and approach-oriented personal strivings are associated with high self-esteem (Heimpel et al., 2006) and that promotion focus is associated with accessibility of esteem-related words (Leonardelli et al., in press). Study 2 extends these provocative findings by investigating relationships between self-esteem and various dispositional measures related to promotion focus and prevention focus.

Method

One hundred and five undergraduates (22 men) participated for credit toward their introductory psychology course. After the self-esteem questionnaire, participants completed several questionnaires theoretically related to promotion focus and prevention focus. We expected that self-esteem would be positively associated with indexes of promotion focus and negatively associated with indexes of prevention focus.

Self-esteem. The Rosenberg self-esteem questionnaire was the same as in Study 1 except it was scaled from 1 to 4 instead of 1 to 5, for ease of completion on computers. Mean self-esteem (31.4 on a scale with possible values from 10 to 40) was at 79th percentile of possible scale values. A meta-analysis of North American self-esteem scores similarly found the mean to be at the 79th percentile of possible scale values (Heine et al., 1999; recall also that the mean of the American sample in Study 1 was at 80% of the maximum scale value). Again, 94% of scores were at or above the theoretical midpoint of the scale (as compared to 93% above the scale in the North American meta-analysis and 94% in Study 1). The standard deviation of scores in the present sample was .48, and $\alpha = .81$.

Promotion focus and prevention focus. Participants completed the promotion ($\alpha = .76$) and prevention ($\alpha = .62$) subscales of the Regulatory Focus Scale (Lockwood, Jordan & Kunda, 2002). Participants indicated, on a 4-point scale (adapted for ease of administration on the computer; 1 = *not at all true of me*; 4 = *very true of me*), the extent to which they typically

focused on eagerly pursuing success (promotion focus) or cautiously guarding against failure (prevention focus). Promotion items referred to the extent to which participants endorsed statements such as “I am focused on the success I hope to achieve” and “I see myself as primarily striving to reach my ideal performance.” Prevention items referred to the extent to which participants endorsed statements such as “My goal is to avoid failure” and “I am anxious that I will fall short of my responsibilities and obligations.”

Behavioral Inhibition System (BIS) and Behavioral Activation System (BAS) scales. The BIS and BAS scales (Carver & White, 1994) assess dispositional sensitivities toward aversive and appetitive motivation and have considerable theoretical overlap with promotion focus and prevention focus, respectively. The scales were designed to operationalize discrete motivational systems responsible for sensitivity to punishment, avoidance motivation, and anxiety on one hand and sensitivity to reward, approach motivation, and positive affect on the other hand (cf. Gray & McNaughton, 2000). The BIS scale ($\alpha = .66$) is composed of seven items including “If I think something unpleasant is going to happen I usually get pretty ‘worked up’” and “I feel worried when I think I have done poorly at something.” The BAS subscale ($\alpha = .72$) most centrally related to promotion focus, BAS-Drive, is composed of four items including “If I see a chance to get something I want, I move on it right away.” All items were answered on a 4-point scale (1 = *not at all true of me*; 4 = *very true of me*).

Action control. We used two of the three facets (recommended by J. Kuhl, January 2006, personal communication) of the Action Control Scale (ACS-90; Kuhl, 1994) to assess the tendency for people to be action oriented and not state oriented in challenging situations (overall $\alpha = .74$). The action-orientation and state-orientation constructs have considerable conceptual overlap with promotion focus and prevention focus, respectively, insofar as both sets of constructs assess tendencies to focus on moving toward desirable incentives versus tendencies to stay vigilantly preoccupied with worrisome thoughts. The 12 items of the failure facet of the ACS 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 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 an action or state orientation. For example, one item on the failure facet begins with the stem, “When I am told that my work has been completely unsatisfactory.”

TABLE 1: Correlations Between Variables Related to Promotion Focus and Prevention Focus

	2	3	4	5	6	7
1. Self-esteem	.34**	-.28**	.22*	-.28**	.33**	-.29**
2. Promotion focus		.18	.36**	.11	.02	.04
3. Prevention focus			-.01	.47**	-.44**	.30**
4. BAS-drive				.06	.01	.14
5. BIS					-.40**	.57**
6. Action orientation						-.35**
7. Rumination						

NOTE: $n_s = 105$. BAS = Behavioral Activation System; BIS = Behavioral Inhibition System.

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

Participants then choose either the action-oriented response, “I don’t let it bother me for too long,” or the state oriented response, “I feel paralyzed.”

Rumination. The rumination subscale of the Rumination-Reflection Questionnaire (Trapnell & Campbell, 1999) consists of 12 items that measure the tendency toward preoccupation with disturbing thoughts about oneself ($\alpha = .88$). Rumination has direct conceptual overlap with prevention focus insofar as both constructs are centrally concerned with the tendency to maintain vigilant focus on distressing thoughts. Participants indicated their level of agreement with 12 statements using a 4-point scale (1 = *strongly disagree*; 4 = *strongly agree*). The scale includes items such as “I spend a great deal of time thinking back over my embarrassing or disappointing moments” and “It is easy for me to put unwanted thoughts out of my mind,” reverse scored.

Results and Discussion

Self-esteem was positively correlated with all of the scales related to promotion focus and negatively correlated with all of the scales related to prevention focus (see Table 1). The correlations of the various measures with self-esteem were as follows: promotion focus, $r = .34$, $p < .001$; prevention focus, $r = -.28$, $p < .005$; BIS, $r = -.28$, $p < .005$; BAS-drive, $r = .22$, $p < .05$; ACS, $r = .33$, $p < .001$; and rumination, $r = -.29$, $p < .005$. These correlational results highlight the links between self-esteem and regulatory focus and are consistent with our claim that zeal is a kind of promotion focus for which people with high self-esteem have a special affinity. This affinity is manifest under difficult circumstances in which people with low self-esteem are more inclined to shrink than flex their muscles (McGregor, 2006a). Indeed, a recent study found that people with high self-esteem even reacted to a relationship threat by exaggerating self-reported dispositional promotion focus (Cavallo, Fitzsimons, and Holmes, 2007). This finding helps explain why the correlations between self-esteem and the

indexes of promotion focus are modest. It is only in threatening contexts that individuals with high self-esteem are especially likely to adopt a promotion focus. Study 3 follows up the correlational results of Study 2 by assessing the interaction effects of self-esteem and a mortality salience threat on subsequent promotion focused and idealistic zeal about personal projects.

STUDY 3

We used zeal about personal projects as the dependent variable in Study 3 to demonstrate the link between the basic promotion-focused and idealistic aspects of zeal. We expected that basic promotion-focused and idealistic aspects of personal projects would be affected by mortality salience and self-esteem in the same way that the Study 1 measure of ideological zeal was. This prediction was based on Higgins’s (1997) claim that ideals are activated during basic goal promotion focus. The dependent variable in Study 3 takes two key aspects of ideological zeal (determination and idealism) and reconstitutes them in a new measure grounded in idiosyncratic goals. Our promotion focus perspective on reactive zeal would be supported if such diverse operationalizations of the same theoretical constructs yielded consistent results. Study 3 was also designed to help set mortality salience effects in a broader context than does Terror Management Theory (Greenberg et al., 1997). Motivated promotion focus in personal goals after mortality salience among individuals with high self-esteem would conceptually replicate the results of Study 1 and provide further support for our defensive promotion-focus interpretation of zealous worldview defense reactions to mortality salience.

Method

One-hundred and thirty-nine undergraduates (26 men) from a 2nd-year psychology course voluntarily participated and were randomly assigned to a mortality

salience or dental pain salience condition, as in Study 1. Participants' self-esteem ([Rosenberg, 1965](#)) scores had been collected the previous week. We excluded data from 2 participants whose self-esteem scores were more than three standard deviations below the mean.

Mean self-esteem (38.9) was similar to that found in the American sample in Study 1 ($M = 40.0$; self-esteem was scaled differently in Study 2) and 93% of scores were above the theoretical midpoint of the scale (as compared to 94% in both Studies 1 and 2). The standard deviation of scores in the present sample was .61, and $\alpha = .88$.

Personal project zeal, our main dependent measure, was adapted from materials previously used in personal projects analysis research ([McGregor & Little, 1998](#); [McGregor et al., 2001](#), Studies 2 and 4). Participants first provided short descriptions of 10 of their ongoing personal projects, which we introduced to them as follows: "We are interested in the personal goals that characterize your life. Most of us have a number of these goals at any given time that we think about, plan for, and try to attain or accomplish." After reading 10 examples of personal projects, such as "get As in all my courses," "make my parents proud of me," "try to stop fighting in my relationship," "stay on top of house chores," participants rated each of their own projects on 10 rating dimensions using a scale from 0 (*not at all*) to 10 (*extremely*).

Four of the personal project zeal dimensions related to face-valid aspects of goal promotion focus: determination, outcome, pleasure, and control. Five of the personal project zeal dimensions were related to personal ideals and have been linked to conviction about purpose and meaning in life in past research ([McGregor & Little, 1998](#); [McGregor et al., 2001](#), Studies 2 and 4): value congruency, self-identity, importance, certainty, and togetherness. To rule out an alternative explanation for the expected results that could claim that threats simply make people turn to easier projects, the 10th project-rating dimension assessed personal project difficulty, and it was used as a covariate in the analyses with the mean of the other 9 dimensions as the personal project zeal dependent variable. Using the difficulty dimension as a covariate sharpens the interpretation of the determination, outcome, pleasure, and control dimensions. With difficulty controlled, they more clearly reflect determined, courageous eagerness and not a cautious tendency to mount safe and easy projects that might also be rated as more pleasant, controllable, and likely to succeed simply because of their ease.

The 10 personal project-rating dimensions in the present study were described to participants as follows:

Determination: How firmly determined are you to complete it even if it requires sacrifices?

Outcome: How likely are you to ultimately succeed at it?

Pleasure: How pleasant is it to engage in?

Control: To what extent do you feel in control of how this project turns out?

Value congruence: Does it reflect the most important values that guide your life?

Self-identity: To what extent does it reflect the kind of person that you truly are, deep down?

Importance: How personally important is it?

Certainty: How certain are you that it is a project that you want to devote yourself to?

Togetherness: To what extent are you doing it to facilitate interpersonal closeness?

Difficulty: How difficult is it to complete?

Results and Discussion

The scree plot from a principal components analysis of personal project dimensional means revealed a single factor solution with the dominant, personal project zeal factor accounting for 37% of the variance (the subsequent, discarded scree factors accounted for 18%, 12%, and 8%). Nine of the 10 dimensions had loadings of greater than .30. The loadings were determination (.76), self-identity (.72), value congruency (.71), importance (.70), certainty (.67), outcome (.63), pleasure (.57), togetherness (.51), control (.36), and difficulty (.19). Only the difficulty dimension failed to reach the .30 loading cutoff, indicating that as expected, zeal does not reflect a tendency toward comfortable projects that are easy to accomplish.

What is striking about the results of the principal components analysis and consistent with our view of promotion focus and ideals as essentially linked is that the four basic promotion focus dimensions and the five idealistic dimensions were equally intercorrelated as evidenced by their equally high loadings onto the single personal project zeal factor. We averaged the nine dimensions that defined this sole factor to yield the main dependent measure of personal project zeal ($\alpha = .80$).

For the main analysis we regressed personal project zeal on centered self-esteem scores, effect-coded condition (mortality salience vs. dental pain), the Self-Esteem \times Condition interaction (again following the procedure advocated by [West et al., 1996](#)). We included the centered difficulty dimension as a covariate. There was a significant positive relationship between the difficulty covariate and zeal ($\beta = .18$, $t = 2.09$, $p < .05$), indicating that, if anything, project zeal was associated with courage to engage in more difficult projects (as described in the introduction; cf. [Lydon & Zanna, 1990](#)). Self-esteem was marginally related to more zealous personal projects ($\beta = .15$, $t = 1.66$, $p < .11$), which is consistent with results of Study 2 and with previous research linking self-esteem with approach-oriented personal strivings ([Heimpel et al., 2006](#)). The

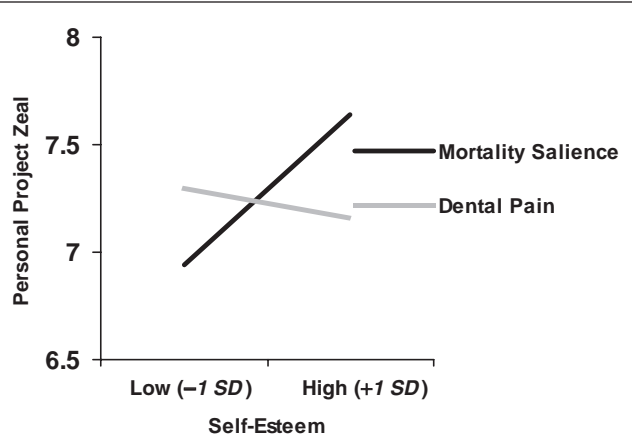


Figure 2 Personal project zeal as a function of self-esteem and mortality salience in Study 3.

first order effect of condition was not related to zeal ($|t| < 1$).³

Of primary interest, the analysis indicated a significant interaction between self-esteem and condition ($\beta = .21$, $t = 2.51$, $p < .05$), with highest zeal among participants with high self-esteem in the mortality salience condition (predicted value of 7.65, see Figure 2).⁴ Tests of simple effects indicated that mortality salience significantly increased zeal at high self-esteem ($\beta = .28$, $t = 2.24$, $p < .05$) but not at low self-esteem ($\beta = -.20$, $t = 1.54$, $p < .14$). Thus, high self-esteem was associated with most personal project zeal after mortality salience in Study 3 just as high self-esteem was associated with most ideological zeal after mortality salience in Study 1.

It is important to emphasize that the interaction effect was supported by both the basic promotion focus and the idealistic dimensions of personal project zeal. Both kinds of dimensions loaded equally well onto the single personal project zeal factor, and exploratory analyses revealed that the individual dimensions most significantly predicted by the Self-Esteem \times Condition interaction were outcome ($\beta = .28$, $t = 3.48$, $p < .001$), self-identity ($\beta = .22$, $t = 2.59$, $p < .05$), value congruency ($\beta = .18$, $t = 2.15$, $p < .05$), and determination ($\beta = .15$, $t = 1.78$, $p < .10$). Thus, the zeal composite can be interpreted as assessing the extent to which participants felt determined to promote personally meaningful goals that reflected their core values and ideals. The tight interrelatedness of the promotion focused and idealistic personal project dimension ratings supports our proposed link between basic goal promotion processes and ideological zeal. The finding that personal project zeal reactions to mortality salience were most pronounced among individuals with high self-esteem (who tend to be dispositionally promotion focused) further supports the conclusion that zealous reactions to mortality salience represent a kind of motivated promotion focus.

GENERAL DISCUSSION

Studies 1 and 3 demonstrate that individuals with high dispositional self-esteem respond to mortality salience with zealous reactions, whereas those with low self-esteem do not. This result clarifies an ambiguity in the literature and is consistent with research showing that self-esteem is associated with the most zealous reactions to other threats as well (reviewed in [McGregor, 2006b](#)). Study 2 found that high self-esteem was associated with various measures related to dispositional promotion focus and approach motivation. Study 3 informs the correlational findings of Study 2 by showing that individuals with high self-esteem respond to mortality salience with zealous promotion of their personal projects, whereas individuals with low self-esteem do not. This conditional link between high self-esteem and promotion focus helps explain the modest correlations in Study 2. Study 3 also demonstrates links between ideals and basic processes related to goal-promotion focus. Together, these findings support the view that zealous reactions to threats represent a kind of motivated promotion focus that is most pronounced among individuals who are dispositionally inclined toward self-promotion (i.e., those with high self-esteem).

Threat as Goal Disruption

Our perspective is grounded in basic goal regulation processes ([McGregor, 2006b, 2006c](#); [Marigold, McGregor, & Zanna, in press](#)). Impeded goals cause activation of the behavioral inhibition system and associated vigilant preoccupation and anxiety among all vertebrates ([Gray & McNaughton, 2000](#)). Theories of human goal regulation posit that high-level, more abstract conceptual goals guide multiple low-level, more concrete goals ([Carver & Scheier, 1998](#); [Higgins, 1996](#)). High-level goals are thus pivotal because if they are disrupted, all subordinate goals are impeded. Thus, threats to high-level goals pose a particularly anxiety-provoking, compound threat to the self-regulation system for humans. Accordingly, the various threats that have successfully caused zealous reactions in past research have all targeted high-level goals for success, understanding, or belongingness but the control condition manipulations have not.

Thinking about personal death has clear relevance to high-level personal goals (e.g., it is the ultimate disruptor of agentic and communal strivings) but thinking about going to the dentist, although aversive for most people, seems less likely to normatively imperil high-level conceptual goals. Similarly, the personal uncertainty threat manipulations that have most reliably caused zealous reactions in other related research

confront people with difficult conflicts about their own high-level values and priorities. The control condition materials in those experiments, in contrast, highlight others' conflicts not relevant to personal goals (McGregor et al., 2001). This goal-threat interpretation is consistent with recent findings showing that people react to threats with anger (another approach-motivation-mediated reaction) only when the threats are relevant to salient personal goals (Harmon-Jones, Lueck, Fearn, & Harmon-Jones, 2006).

From our perspective, then, mortality salience is a very powerful threat because it simultaneously threatens several high-level goals, for example, by humbling pretensions to personal magnificence, introducing existential uncertainty about how to live life, and highlighting the prospect of severed ties with loved ones. Mortality salience is thus a composite threat to important, high-level goals for worth, understanding, and attachment security that are difficult to disengage from. As a result, mortality salience initially activates the BIS's suite of reactions to goal disruption including aroused anxiety (McGregor et al., 2001; van den Bos, Poortvliet, Maas, Miedema, & van den Ham, 2005) and vigilant preoccupation with the source of the threat (i.e., prevention focus; cf. Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997). We contend that zealous reactions subsequently serve to alleviate preoccupation with threats by activating a promotion focus.

Zeal as Goal Regulation

When goals are going well, focus is adaptively and somewhat myopically constrained to eager promotion of the succeeding goal (Harmon-Jones, 2006; Harmon-Jones et al., 2006). But when goals get obstructed organisms need a mechanism for changing course or disengaging from blocked goals. The BIS ultimately supports effective goal regulation by raising anxiety, arousal, and vigilant hesitancy when goals are disrupted. With BIS activation, anxious vigilance persists until a viable alternative goal is unequivocally identified and re-engaged or flight becomes clearly necessary.⁵ Once a viable alternative goal is identified, the anxious arousal of BIS activation is replaced by the eager arousal of unconstrained BAS activation for tenacious pursuit of the alternative (Carver & Scheier, 1998; Gray & McNaughton, 2000).

We propose that these basic processes can account for ideological zeal reactions to threats. Human BIS circuitry has projections to and from the prefrontal cortex. These circuits allow for abstract, conceptual goals and ideals to be regulated the same way concrete goals are. This means that idealized convictions can serve as alternative goals when other high-level goals are

threatened. Our view of idealized convictions as goals is rooted in Carver and Scheier's (1998; cf. Powers, 1973) depiction of ideal system concepts and principles as high-level abstract goals that guide nested, more concrete, lower level goals (see also, Elliot, 2006). Abstract ideals, goals, and meanings are not only motivationally superordinate, they are also resistant to habituation, disillusionment, or factual refutation (cf. Klinger, 1977) because they are difficult to conclusively disprove or fully realize. As such, convictions about ideals are well suited to serve as reliable alternative goals when focal goals are threatened. Moreover, ideals are functionally linked to eager promotion focus (Amodio et al., 2004; Higgins, 1997). From this goal-regulation perspective, then, zealous reactions to threats represent a tendency to quell the anxiety of goal disruption with fervent promotion of alternative, high-level goals and ideals (Marigold et al., in press). Doing so effectively re-engages the sanguine processes related to promotion focus and approach motivation, relieves the distress associated with behavioral inhibition, and renders threats less motivationally relevant.

Research on the relative cerebral hemisphericity of promotion and approach, prevention and avoidance processes supports this perspective. The immediate experience of mortality salience and other threats that most people would like to avoid is associated with relative right-frontal cerebral hemispheric activation, which is relatively specialized for anxious rumination, avoidance motivation, and prevention focus (Martin & Shrira, 2005; Sutton & Davidson, 1997). In contrast, goal efficacy, feelings of courage, and thoughts related to ideal values, ideologies, and meanings are associated with relative left-frontal cerebral hemispheric activation, which is relatively specialized for approach motivation and promotion focus (e.g., Drake & Myers, 2006; Martin & Shrira, 2005; Urry et al., 2004; Zarate, Sanders, & Garza, 2000; for reviews see McGregor, 2006b, 2006c). An important finding by Amodio et al. (2004) shows that promotion and prevention focus are negatively correlated. Accordingly, Jackson et al. (2003) found that relative left hemisphere activation was associated with decreased startle responses after the offset of threatening stimuli, presumably because processes related to threat vigilance were attenuated. More directly, Tomarken and Davidson (1994) found that left hemisphere activation was associated with repression of unwanted thoughts, and Sullivan (2004) has proposed that left hemisphere activation plays a role in emotion regulation, even in rats.

Preliminary research in one of our labs supports this view that zeal may represent a kind of motivated promotion focus that can quell threatening thoughts

(see also Cavallo et al., 2007). After a delay long enough for zealous reactions to be mounted, mortality salience and personal uncertainty threats caused an increase in relative left hemisphere activation (McGregor, 2006c). Moreover, these results were only found among individuals with high self-esteem who appear to have a dispositional tendency toward self-promotion (as shown in Study 2) especially after threats (as shown in Study 3).

Our self-esteem results in Studies 1 through 3 of this research are consistent with findings that individuals with high self-esteem are more willing to promote positive moods after threats than are those with low self-esteem (Heimpel, Wood, Marshall, & Brown, 2002). The reluctance of low self-esteem individuals to react to threats with zeal may stem from their lack of willingness to risk the social disapproval that can accompany the often brash strategies that people with high self-esteem use for mood repair (cf. Baumeister et al., 1989; Heatherton & Vohs, 2000). When threatened, individuals with low self-esteem prefer to become more interdependent and security oriented—a prevention focused strategy that avoids the relatively risky promotion focused strategy of zeal. The self-promotional reactions to threats that people with high self-esteem gravitate toward after threats are sometimes seen as antagonistic by their peers (Heatherton & Vohs, 2000; Vohs & Heatherton, 2001).⁶

Concluding Comments

These results add to a growing list of findings that call for an integration of research on zealous reactions to mortality salience and other threats. Mortality salience and other threats cause the same kinds of zealous reactions, which serve the common function of masking the threats, particularly among self-promotional people (McGregor, 2006b). Despite these parallels, theoretical barriers and an empirical quandary have discouraged integration. The present work resolves the empirical quandary and provides a theoretical rationale for integration. Individuals with high explicit dispositional self-esteem react to mortality salience much like they react to other poignant self-threats—with increased promotion focused zeal in domains unrelated to the threat. We suggest that such zealous reactions quell distress by activating a promotion focus, which renders aversive stimuli less compelling (see McGregor, 2006c, for evidence that zeal does quell distress). We conclude that reactions to mortality salience and other threats have more in common than was previously appreciated, and we encourage continued efforts at theoretical integration (e.g., Hart, Shaver, & Goldenberg, 2005; Heine, Proulx, & Vohs, 2006; van den Bos, 2006).

NOTES

1. Research has repeatedly shown that high dispositional self-esteem is associated with lower feelings of anxiety about death (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Such findings are consistent with other research showing that people with high self-esteem are highly motivated to repair bad moods (Dodgson & Wood, 1998; Heimpel, Wood, Marshall, & Brown, 2002; Smith & Petty, 1995) and that they also report lower anxiety after mortality salience (Pyszczynski et al., 2004) and after threats that are not related to death (Dutton & Brown, 1997). An important distinction to keep in mind is that after threats dispositional self-esteem is differentially related to bad feelings and to defensive zeal, and so research on affective and zealous reactions to mortality salience will often yield apparently contradictory results. High self-esteem has consistently been shown to be associated with less negative affect after threats but with more zealous responses to threats (e.g., see Dodgson & Wood, 1998; Dutton & Brown, 1997; Heatherton & Vohs, 2000; Heimpel et al., 2002; McGregor & Marigold, 2003; McGregor et al., 2005).

A related, important distinction is that manipulated and dispositional self-esteem have opposite moderating effects on zealous reactions to threats (e.g., compare findings reviewed by Sherman & Cohen, 2006, to those reviewed by McGregor, 2006b). After threats, situational affirmations of worth make people more open-minded and less defensive but people with high dispositional self-esteem have the most zealous reactions to threats. It appears that situational affirmations serve the same purpose as the zealous defenses that people with high self-esteem turn to in the face of threats. Situational affirmations and zealous defenses activate regulatory processes related to promotion focus, which quell distress in the face of threats (McGregor, 2006c).

2. Results from participants' mortality salience and ideological zeal data were previously reported in a larger study that included other participants who had not completed self-esteem scales at the beginning of the term. That study ignored self-esteem (because all participants had not completed the scale) and focused on a different dependent variable that assessed effortful persistence on a boring task (Gailliot, Schmeichel, & Baumeister, 2006, Study 9). The self-esteem main effect and interaction effect on ideological zeal reported in this article have not been reported elsewhere.

3. There was a main effect for mortality salience in Study 1 but not in Study 3. In Study 3, the main effect of mortality salience on personal project zeal was obscured by the tendency for individuals with low self-esteem to become (nonsignificantly) deflated after mortality salience and report less zeal than in the control condition. The shape of the graph in Study 3 and the lack of a main effect are consistent with a recent finding that has similarly revealed no main effects of mortality salience or uncertainty threats on personal project determination. As in Study 3, in that research threats significantly increased personal project determination among participants with high self-esteem, but also significantly decreased determination among participants with low self-esteem (McGregor, 2006a).

One reason why the pattern at low self-esteem may be different for ideological zeal (in Study 1 of this research) than for personal project zeal (in Study 3 of this research) may be that participants with low self-esteem can meekly identify with groups for reasons other than self-promoting zeal—they can cleave to groups for self-protection and security (Vohs & Heatherton, 2001). In contrast, there is nothing about idiosyncratic personal project zeal that people with low self-esteem can meekly identify with for security. Instead, their tendency to become meek after threats is reflected by lower zeal and withered determination at their personal projects.

4. The Mortality Salience \times Self-Esteem interaction was similarly significant without inclusion of the difficult covariate, $\beta = .20$, $t = 2.31$, $p = .02$, and the Mortality Salience \times Self-Esteem interaction did not predict difficulty, $\beta = .05$, $|t| < 1$, $p = ns$.

5. Vertebrates with lesions to brain areas related to the Behavioral Inhibition System (BIS) fail to disengage from blocked goals. Various antianxiety medications have the same effect as these lesions. They alleviate anxiety associated with disrupted goals but they also compromise appropriate disengagement (Gray & McNaughton, 2000).

6. The Vohs and Heatherton (2001) finding that those with low self-esteem become more interdependent when threatened may further inform past inconsistencies regarding how self-esteem moderates intergroup reactions to mortality salience. In some circumstances, intergroup bias might reflect self-righteous ingroup superiority and disdain for the out-group, which one might expect to be most evident among haughty individuals (e.g., as found by McGregor, Nail, Marigold, & Kang, 2005, Study 3). Indeed, in Study 1 of this research, the effect was driven by out-group derogation. But intergroup bias might also reflect a meek desire to be part of a safe and familiar collective for nurturance, which one might expect to be most evident among people with low self-esteem (Vohs & Heatherton, 2001; cf. Mikulincer, Orbach, & Iavnieli, 1998, for related research with anxious individuals). Thus, self-esteem moderation results could vary depending on which aspect of group identification was more salient—group ideals or group safety. Future research should directly manipulate this variable and make use of dependent variables that are motivationally unambiguous in this regard.

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