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Imbuing Everyday Actions with Meaning in Response to Existential Threat

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Drawing on terror management theory and related perspectives on existential motivation, we hypothesized that people manage concerns with personal mortality by imbuing their everyday actions with abstract, self-relevant meaning. Accordingly, we found that subtle reminders of mortality led participants to view hypothetical actions at higher levels of action identification (Study 1), draw more connections between their current actions and personally significant long-term goals (Study 2), and perceive past actions as particularly influential in shaping their current self-concept (Study 3). These findings complement prior research, which has focused on the motivated defense of cultural worldviews, by showing how existential motivation shapes perceptions of even mundane personal actions.

Keywords: Action identification theory; Counterfactual reasoning; Meaning; Self; Terror management theory; Time.

Multiple theorists working within existential, psychodynamic, and humanistic traditions converge on the notion that individuals strive to imbue their lives with meaning and significance in order to protect themselves against the threatening awareness that their existence is inherently uncertain, arbitrary, and destined to end (e.g., Becker, 1973; Frankl, 1963; May, 1953). For many years, these perspectives remained in the realm of theory; but the past two decades have seen the emergence of multiple lines of empirical research investigating the impact of existential threats on people's efforts to affirm bases of meaning (Greenberg, Koole, & Pyszczynski, 2004, provide a compendium of this work). The majority of this research operationalizes meaning-seeking as investment in one's cultural worldview, with hundreds of studies showing that increasing the salience of

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existential threats motivates people to bolster and defend their culture's values, norms and institutions.

Numerous theorists have argued, though, that people maintain psychological security from existential threats not only by clinging to a cultural worldview, but also by perceiving their "everyday" behaviors (e.g., walking to work) as meaningfully related to their global sense of Self (Camus, 1955; Heidegger, 1953/1996; Kierkegaard, 1848/1997). Although this claim has interesting implications for how people make sense of themselves and the significance of their actions across time, it has not yet received direct empirical attention. Using terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986) as an empirical framework, the current research aims to fill this gap with three studies testing the idea that subtle reminders of personal mortality will motivate people to imbue their everyday actions with meaning.

Prior Research on Existential Threat and Meaning-seeking

As just mentioned, a number of research programs converge on the notion that people are motivated to view their lives as meaningful as a means of maintaining psychological security. One such perspective is TMT, which posits that people invest faith in a culturally derived conception of reality (a cultural worldview), and strive to view their lives as having lasting significance within the context of that worldview, as a means of shielding themselves from the awareness of their inevitable death. Supporting this analysis is a large body of evidence that subtle reminders of mortality (i.e., mortality salience; MS) lead people to bolster aspects of their worldview and defend those belief systems against threats to their validity (see Greenberg, Solomon, & Arndt, 2008; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, for reviews of this work). Studies show, for example, that MS (relative to aversive control topics such as pain, future uncertainty, and social exclusion) amplifies positive reactions towards people and ideas that are consistent with the nationalistic, religious, and moral beliefs of the culture, and similarly increases negative reactions toward people and ideas that oppose those beliefs, even though these forms of worldview defense share no superficial resemblance to the problem of inevitable death.

TMT converges with other perspectives that emphasize the function of cultural worldview defense in buffering existential threats. According to uncertainty management theory (McGregor, Zanna, Holmes, & Spencer, 2001; van den Bos, Poortvliet, Maas, Miedema, & van den Ham, 2005), cultural worldviews function to manage feelings of personal uncertainty by providing a definite and reliable conception of the world and oneself. Research inspired by this perspective shows, for example, that inducing uncertainty by having participants imagine how a childhood memory could change over time led them to express more negative attitudes toward a stranger who criticized their university.

In a similar vein, Heine and colleagues proposed the meaning maintenance model (Heine, Proulx, & Vohs, 2006), which claims that cultural worldviews provide an extensive network of expected relations that serve the individual's underlying motivation to maintain meaningful conceptions of reality. Supporting evidence shows, for example, that threatening an individual's sense of meaning by presenting a perceptual anomaly led to increased punitiveness towards a prostitute (Proulx & Heine, 2008). Although TMT, uncertainty management theory, and the meaning maintenance model focus on distinct existential threats, they share a theoretical

emphasis on the significance of those threats in motivating people to seek and defend bases of meaning (see McGregor, 2006; Pyszczynski, Greenberg, Solomon, & Maxfield, 2006, for discussions of how these perspectives interrelate).[1]

Extending Prior Work to Examine the Perceived Meaning of Everyday Actions

Note that the majority of the research just reviewed operationalizes meaning-seeking as the defense of aspects of one's cultural worldview (e.g., norms and institutions). Certainly cultural worldviews are critical for sustaining existential meaning. They provide a framework for understanding the context and purpose of one's life, delineate standards for valued conduct, and offer opportunities to transcend physical death (e.g., through literal afterlife beliefs). Nevertheless, there are obviously other, more personal, strategies that people may use to lend meaning to their lives and experience. Focusing on how existential threat influences these personal strategies stands to contribute to a more comprehensive understanding of the role that existential concerns play in people's everyday lives.

A few studies have examined how existential threats influence perceptions of the global meaning of one's life. For example, McGregor et al. (2001, Study 4) showed that MS, and personal uncertainty to a lesser extent, led to higher scores (relative to controls) on an identity-seeking scale conceptually linked to the search for meaning in life. More recently, Routledge, Arndt, Sedikides, and Wildschut (2008) argued that proneness for nostalgic reflection may protect individuals from the perception of life's meaninglessness. Accordingly, they found that MS led to lower levels of meaning in life only among those not prone to engage in nostalgia.

The purpose of the current research was to build on prior work by directly assessing whether the motive to allay existential threats influences people's perceptions of the meaning of their everyday actions. Drawing on TMT, we hypothesized that people protect themselves from the awareness of personal mortality (in part) by perceiving their actions as purposeful and integrally connected to their broad, temporally extended self-concept. Empirical support for this possibility would suggest that the motivation to allay mortality concerns drives people not only to imbue their lives as a whole with global meaning, but also to view their specific actions as meaningful rather than as pointless and isolated in significance.

We assessed this general hypothesis in three studies that tested the effect of MS on distinct but related tendencies to imbue personal action with meaning. According to action identification theory (Vallacher & Wegner, 1987), people generally prefer to understand their actions in the more abstract terms of *why* they were performed rather than in the more concrete terms of *how* the actions were performed. Therefore, in Study 1 we predicted that MS would lead people to identify hypothetical actions at particularly high levels of abstraction. Study 2 was inspired by perspectives on self-regulation (e.g., construal level theory; Trope & Liberman, 2003), which suggest that people lend meaning to action by viewing current activities as instrumental steps in achieving more abstract goals. We therefore predicted that MS would make people more likely to meaningfully connect their specific current actions with their long-term personal goals. Study 3 drew on perspectives on identity and autobiographical continuity (e.g., Erikson, 1968; McAdams, 2001), which suggest that people sustain meaning in life by perceiving their current self as a culmination of past actions. Therefore, we predicted that MS-primed participants would perceive their past actions as particularly influential in shaping who they have become.

Study 1: Action Identification

One pervasive means of lending actions meaning is viewing them in terms of why they were done, and what their effects and implications are, rather than as mere sequences of physical behaviors. For instance, *eating* may be described as chewing and swallowing—quite specific physical actions with little relation to a broader goal—but eating may also be described as reducing hunger, gaining weight, or getting nutrition, actions that implicate a broader and more significant goal-oriented process. Vallacher and Wegner (1987) characterized these as low-level and high-level action identities, respectively. If, as we propose, viewing specific actions as infused with meaning buffers mortality concerns, then MS should increase participants' preference for high-level action identities.

Method

Thirty undergraduate students (14 females, 16 males)[2] received partial course credit for participating in a study described as an investigation of personality and language. Participants were run in a group in a classroom setting and were randomly assigned to an MS or neutral control condition.

Mortality salience manipulation. Participants received a packet that contained all materials for the experiment. The first item in the packet was a demographic questionnaire. The second item was a word search puzzle that composed the MS manipulation (used in prior research; e.g., Martens, Greenberg, & Schimel, 2003; Maxfield et al., 2007). Participants were instructed to find 10 target words in a grid of jumbled letters. The target words were neutral in content and did not relate to any particular theme (e.g., build, walk, pear). In the MS condition, seven words related to death were embedded in the letter grid: burial, corpse, dead, death, decay, die, funeral. In the neutral condition, the death related words were replaced with random letter strings. For example, in place of "die" the neutral puzzle had the letter string "dcs."

Measure of preferred level of action identification. The next item in the packet was the Behavioral Identification Form (BIF; Vallacher & Wegner, 1989). The BIF presents 25 behaviors and asks participants to choose which one of two descriptions they personally believe is more appropriate to describe each behavior. Specifically, the instructions state: "Your task is to choose the identification that best describes the behavior for you" and " . . . . select the description that *you personally believe* is more appropriate for each pair" (italics included in original instructions).

For each item, one description was at a low level of action identification and the other was at a high level. For example, participants chose whether "Locking a door" is best described as "Putting a key in the lock" (low-level) or "Securing the house" (high-level). We assumed that many of the items in the BIF constituted actions that participants themselves likely engage in at one time or another (e.g., locking a door, brushing one's teeth). The total number of high-level action identities participants chose served as our dependent measure.

Results and Discussion

A *t*-test showed that participants who had completed the subtle mortality salience induction (i.e., the death-related puzzle) selected more of the high-level action

identities ($M = 17.94$, $SD = 4.22$) than did participants who had completed the neutral, non-death puzzle ($M = 14.07$, $SD = 3.91$), $t(28) = 2.59$, $p = .02$.

These results supported our hypothesis that MS would lead participants to endorse more high-level (fewer low-level) identifications of hypothetical actions that they are likely to perform in their everyday lives. This finding supports our general claim that people are motivated to imbue their actions with meaning (at least in part) as a defense against mortality concerns. However, some limitations of this study warrant attention. First, although the actions depicted in the BIF are highly common and likely to be relevant to the participants' everyday lives, they are still hypothetical in nature. Furthermore, control participants in this study did not contemplate an aversive topic other than death, so it is possible that contemplating any negative or self-threatening topic could have produced effects parallel to those of MS. Importantly, though, hundreds of prior TMT studies have compared MS to inductions that prime diverse and aversive outcomes (e.g., negative future events, general anxieties, uncertainty, failure, social exclusion, uncertain bouts of intense physical pain) and consistently found that contemplating these outcomes does not produce the same effects engendered by MS (see Greenberg et al., 2008). Nevertheless, we addressed these limitations in the remaining studies by examining tendencies to imbue meaning to actual current and past actions, and by comparing MS to the salience of two different aversive experiences: social exclusion (Study 2) and uncertain bouts of intense physical pain (Study 3).

Study 2: Current Actions and Self-relevant Goals

Perspectives on self-regulation suggest that people make sense of their day-to-day activities by framing them as part of their abstract, long-term goal pursuits (Wegner, Vallacher, Kiersted, & Dizadji, 1986). For instance, whereas perceiving the events scheduled in the coming week as a sequence of isolated, routine tasks offers little sense that such actions possess significance, construing the same actions as substantively tied to one's broader long-term goals may help to sustain a meaningful conception of one's life. Indeed, the belief that one invests time and energy to pursue cherished goals lends purpose and meaning to life (e.g., Ryff & Singer, 1998). Building on these perspectives, we hypothesized in Study 2 that MS-induced meaning-seeking would heighten people's tendency to perceive more meaningful connections between their current actions and the personal goals they hope to accomplish in the distant future.

Also, building on Study 1, we compared MS with an aversive control condition that primed thoughts of social exclusion to control for the possibility that the hypothesized MS effect is merely a generalized reaction to reminders of any aversive experience. Using a control induction that increased the salience of social exclusion also allowed us to address a proposed alternative explanation of MS effects according to which MS threatens the individual with feelings of social exclusion (Leary & Baumeister, 2000). Although prior research has shown different effects for the salience of mortality and social exclusion (e.g., Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006), our use of the social exclusion control prime in this study afforded a test of the merits of the social exclusion alternative for MS effects on meaningful perceptions of personal action.

Finally, prior research has established that symbolic, meaning-related terror management defenses (e.g., worldview defense) occur most prominently when thoughts of death are highly accessible but outside conscious awareness (Arndt,

Cook, & Routledge, 2004). In Study 1, this was accomplished by implicitly priming mortality by embedding death-related words in a word-search task. In Studies 2 and 3, we explicitly reminded participants of their mortality. Prior research shows that the accessibility of death-related thoughts following explicit mortality reminders is most pronounced after a short period of delay between the mortality reminder and dependent variable assessments (e.g., Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994; Kosloff & Greenberg, 2009). Therefore, following the MS manipulation and before the dependent measure, we instituted a delay by having all participants complete the PANAS-X measure of self-reported affect. Including the PANAS-X also allowed us to assess potential affective consequences of the MS manipulation, and to test the alternative interpretation that the hypothesized MS effect is due to variations in self-reported affect rather than the salience of death per se.

Method

Fifty-eight undergraduates (32 females, 26 males) received course credit for taking part in a study purported to investigate personality differences. Participants were run individually in a laboratory setting. In private cubicles, they completed a packet containing all materials for the study.

The first page instructed them to list 5 long-term, personally important goals that they hoped to accomplish within the next 40 years. Participants were instructed to write a sentence or two summarizing each long-term goal and to generate a "keyword" that stood for that goal and that would make it easy to remember the goal later in the experiment. On the next page, participants were asked to think of 10 specific activities that they planned to do within the next few days and, for each activity, to write a summary and generate a representative keyword. The experimenter then explained that the information needed time to settle, and that in the meantime participants could complete some standard personality questionnaires. She administered a randomly assigned packet containing two filler questionnaires (included to sustain the cover story) followed by the MS manipulation.

Mortality salience manipulation and delay. Participants in the MS condition responded to two open-ended questions (used in previous studies, e.g., Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989): "Please briefly describe the emotions that the thought of your own death arouses in you" and "Jot down, as specifically as you can, what you think will happen to you physically as you die and once you are physically dead." Participants in the control condition responded to parallel questions regarding the experience of being socially excluded: "Please describe the emotions that the thought of being excluded by your friends arouses in you" and "Jot down, as specifically as you can, what you think happens to you as you (against your desires) physically are excluded and once you have been excluded from your circle of friends."

After the MS manipulation participants completed Watson and Clark's (1994) 60-item Positive and Negative Affect Schedule-Expanded form (PANAS-X). Participants indicated the extent to which they were currently feeling a variety of positive ($M = 3.20$, $SD = 0.88$, $\alpha = .90$) and negative ($M = 1.89$, $SD = 0.89$, $\alpha = .87$) emotions (e.g., "excited," "scared") on a 1 (*very slightly or not at all*) to 5 (*extremely*) scale.

Meaningful connections measure. Participants received a final questionnaire that served as our measure of perceived continuity between current actions and long-term

personal goals. Arranged on the page were 5 boxes, each with a smaller box on top of it. The instructions stated:

> In this task we are interested in how you see your current activities as related to your long-term goals. First, write the keyword for each of the 5 goals you listed earlier in the top part of the boxes below. Second, with that goal in mind, look over the current activities you listed. If you feel that there is a *meaningful connection* between a current activity and the long-term goal, write the keyword for that activity underneath the goal in the bottom of the box. *Under each goal you may list as few or as many activities as you wish*. You do *not* have to use every activity, only those that you feel are meaningfully related to a long-term goal. Also, each activity may be listed under more than one goal; so you may reuse the activities as many times as you like.

The number of action keywords participants identified as meaningfully connected to long-term goals constituted the dependent measure.

Results and Discussion

In line with our prediction, a *t*-test revealed that participants connected more of their current actions to long-term personal goals under MS ($M = 10.9$, $SD = 4.39$) compared to exclusion salience ($M = 8.25$, $SD = 3.63$), $t(56) = 2.49$, $p = .02$.

Affect. For this study and Study 3, we assessed whether MS affected mood by performing MANOVAs and ANOVAs on the various subscales of the PANAS-X and the aggregate positive and negative affect scores using our primary predictors. Consistent with previous TMT research demonstrating that MS does not engender affect (e.g., as reviewed by Greenberg et al., 2008), analyses revealed no indication that MS or its interactions influenced PANAS-X positive or negative affect scales or their constitutive subscales. Furthermore, to ensure that the MS effects reported here were not mediated by affect, we conducted analyses of covariance (ANCOVAs) with the affect subscales scores (including positive and negative affect) as covariates and our primary predicted effects remained statistically intact (the pattern of significant results for all studies remained the same when positive and negative affect were covaried out). These null findings on the PANAS-X scales are consistent with hundreds of prior studies assessing MS effects, which consistently show that MS does not influence self-reported affect or heighten autonomic indices of arousal, and that MS effects on measures of symbolic defense (e.g., worldview defense) are not mediated by affective responses to MS.

In summary, the results of Study 2 supported our hypothesis that, after being reminded of their own death, participants would be more likely to view specific current actions as meaningfully connected to what they hope to do and be in the distant future. Furthermore, analyses of self-reported affect following the MS manipulation suggest that this effect was not due to differences in affect or arousal between the MS and exclusion salience conditions. These results suggest that people are motivated to allay existential concerns about death by perceiving their current actions not as isolated activities but as necessary steps in becoming the persons they hope to become. In Study 3 we sought to extend this finding by examining how people meaningfully connect their past actions with who they are today.

Study 3: Past Actions and the Current Self

As mentioned in the introduction, perspectives on identity and self-continuity (e.g., Erikson, 1968; McAdams, 2001; Sani, 2008) suggest that people give overarching

meaning to their lives by viewing their current self as a culmination of a meaningful, systematic progression of actions and experiences. For example, perceiving one's present self as disconnected from personally important past experience, such as a childhood friendship or first love, may leave one feeling stripped of events formative to one's identity, whereas perceiving such past actions as strongly related to one's present self might help shore up a sense that one's identity is embedded in a coherent and memorable series of actions and events.

What happens, then, when people entertain an *existential counterfactual* (ECF), that is, they imagine how their self or life would be different if significant actions or experiences had never transpired? Insofar as people perceive past actions as formative of their current self-concept, they should imagine that their current self would be very different if they had never performed those actions. Furthermore, if it is true that people imbue their actions with meaning to allay mortality threats, then after MS they should be especially likely to imagine that they would be very different people today if they had never performed those actions.

Study 3 tested this hypothesis. We also wanted to test our claim that meaningfully connecting one's past actions to the current self is a uniquely *personal* basis of meaning, and does not simply reflect a general preference for continuity in anyone's life. Therefore, we had some participants consider a personal ECF, while others imagined how a hypothetical individual would be different if s/he had not performed a significant action. We predicted that MS would lead participants to perceive a greater impact of a personal ECF on their own self-concept, but MS would not significantly affect participants' perceptions of the impact of an other-relevant ECF on that person's self-concept.

Method

One hundred twenty-three undergraduates (59 females, 64 males) participated in exchange for course credit. Participants were run individually in a laboratory setting. In private cubicles, they completed a packet containing all the materials for the study. Participants in the MS condition completed the same open-ended questions pertaining to one's eventual death that were used in Study 2. Participants in the control condition completed parallel questions, used by Landau and Greenberg (2006), pertaining to the experience of uncertain bouts of severe physical pain: "Imagine experiencing bouts of intense physical pain; you are uncertain how long they will last, when they will occur, and how they will affect your activities. Please briefly describe the emotions that the thought of experiencing such bouts of pain arouses in you . . . . Jot down, as specifically as you can, what you think will happen to you as you experience these bouts of pain and once you have experienced them." By asking participants to think about unpredictable bouts of intense physical pain, this induction was intended to make high averseness and high uncertainty salient. All participants then completed the PANAS-X as the necessary delay and distraction.

Existential counterfactual manipulation. Participants in the personal ECF condition were asked to think about a past action (e.g., meeting a specific person) that significantly influenced their lives. They were then asked to write a few sentences describing how their lives would be different if that action had never occurred. Participants in the other-relevant ECF condition were given a vignette about a fictional other (Chris), who met a teacher that inspired and encouraged Chris to

pursue a satisfying career. They were then asked to describe how Chris's life would be different if s/he had never met that teacher.

Perceived difference in counterfactual self/other. Participants responded to three items designed to assess their perception of difference in either their current self or Chris's current self (depending on condition) given the ECF: "If that action never occurred ... I [Chris] would be someone other than who I am [he or she is] today; My [Chris's] core sense of who I am [he or she is] wouldn't be any different from who I am [he or she is] now; Though some details of my [Chris's] life might be different, I [Chris] would be essentially the exact same person that I am [he or she is] now." Responses were made on a 1 (*completely disagree*) to 7 (*completely agree*) scale. Responses to the second and third items were reverse scored, and responses to all three items were averaged to form composite difference scores ($M_{grand} = 3.98$, $SD = 1.77$, $\alpha = .91$), such that higher scores indicated stronger perceptions that the past action imagined never to have occurred was formative in one's own current self or a hypothetical other's current self.

Results and Discussion

Participants' ratings of differences in counterfactual self/other were submitted to a 2 (MS vs. uncertain pain) × 2 (personal ECF vs. other-relevant ECF) ANOVA. No main effects were observed for either MS ($F = 1.32$, $p = .25$) or existential counterfactual condition ($F < 1$, $p = .38$), but the predicted two-way interaction emerged, $F(1, 119) = 4.28$, $p = .04$. Pairwise comparisons (LSD) and the pattern of means depicted in Figure 1 indicate that participants imagined that their current self would be more different if they had never performed a past action under MS compared to uncertain pain salience ($M = 4.64$, $SD = 1.54$ vs. $M = 3.62$, $SD = 1.97$), $F(1, 119) = 5.05$, $p = .03$. Also, within the MS condition, participants viewed the impact of a personal ECF on their current self as greater than the impact of an other-relevant ECF on his or her current self ($M = 4.64$, $SD = 1.54$ vs. $M = 3.71$,

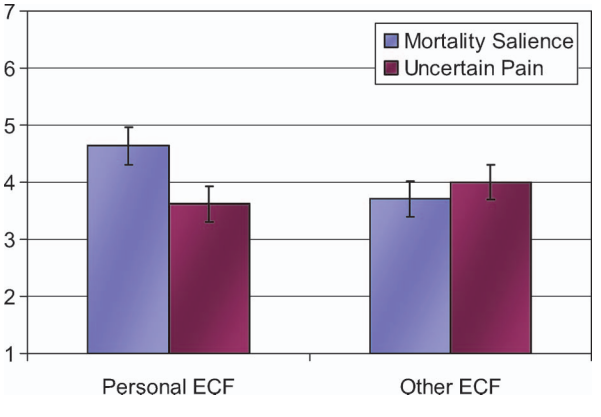

FIGURE 1 Perceived difference in the self/other as a function of mortality salience and personal vs. other-relevant existential counterfactual. *Note*: Scale ranged from 1 to 7, with higher scores indicating greater perceived difference. Error bars represent standard errors.

$SD = 1.68$). $F(1, 119) = 4.19$, $p = .04$. No other pairwise comparisons reached significance ($Fs < 1$, $ps > .39$).

These results supported our hypothesis that participants primed with mortality (vs. uncertain bouts of intense pain) would become more inclined to imbue meaning to their past actions, and would therefore perceive that they would be very different people today if they had never performed those actions. Also as predicted, MS affected perceptions of self-relevant, but not other-relevant, existential counterfactuals: MS-primed participants were no more likely to attribute determinative meaning to another person's past actions. These findings converge with the results of Studies 1 and 2 in showing evidence of MS-induced ascription of meaning to personal action, but extend those findings to perceptions of past actions and their relevance for the current self-concept.

General Discussion

The results of three studies provided support for our TMT-derived hypothesis that increasing the salience of mortality motivates individuals to imbue their everyday actions with meaning. In Study 1, subtle exposure to death-related concepts led participants to identify more everyday actions (e.g., locking a door, washing clothes, tooth brushing) in terms of why they were performed rather than as physical sequences of behaviors. In Study 2, mortality salient participants perceived more meaningful connections between their current activities and broad future goals compared to participants who contemplated social exclusion. And in Study 3, mortality salient participants viewed the elimination of an important past action (existential counterfactual thinking) as more likely to significantly impact their present self (but not a hypothetical other) compared to participants primed with uncertain and intense pain.

In addition to demonstrating the significant role that existential motives play in the cognitive tendencies of action identification, future action planning, and perceptions of past experience, the current studies are the first to extend TMT to examine the role of mortality concerns in people's perceptions of their everyday actions. Prior studies showed that MS heightens efforts to maintain existing bases of secure meaning and value (Castano, Yzerbyt, Paladino, & Sacchi, 2002; Greenberg et al., 2008), and to apply existing norms and schemas in evaluating and understanding others' behavior (Landau et al., 2004; Schimel et al., 1999). The present findings add to this literature by showing that MS promotes perception of meaning in actions relevant to the self. Certainly, meaning is a multifaceted construct (Flanagan, 2007), and we chose to operationalize meaning based on several established psychological perspectives (McAdams, 2001; Trope & Liberman, 2003; Vallacher & Wegner, 1987). Accordingly, the present findings speak specifically to the terror management function served by perceiving abstract significance in potentially quite mundane everyday actions, and mentally representing temporally distant life events and goals as coherent and interconnected with who one is in the present and who one will become in the future.

As in prior TMT research, the present studies showed consistent effects across operationalizations of MS (embedded death terms in a word-search puzzle in Study 1; open-ended questions about death in Studies 2 & 3), as well as across neutral (Study 1) and distinct aversive control conditions (social exclusion in Study 2; uncertain bouts of pain in Study 3). Of course, no single study or small set of studies can definitively determine whether effects such as those found here

are unique to the threat of death, or would occur in response to other threats as well. Nonetheless, the convergent evidence we obtained in the present studies strengthens our confidence that the observed effects indeed resulted from contemplating death, and were not a result of activating negative, uncertain, or otherwise self-relevant threatening concerns (as some have suggested, e.g., Leary & Baumeister, 2000).

It is also important to note, however, that while the present findings suggest that existential concerns with death represent a substantial basis for humans' need to see their actions as meaningful, certainly the meaningful perception of action may serve other psychological functions. For instance, abstract construals of events can facilitate self-control and thus aid in judgment and decision making (e.g., Fujita, Trope, Liberman, & Levin-Sagi, 2006; Schmeichel & Vohs, 2009), suggesting that motives for meaningful interpretation can serve instrumental, as well as existential, functions. An important task for future research will therefore be distinguishing the role of terror management concerns from other possible motives for meaning-making.

While more research is therefore needed to fully specify the role of terror management in the process of everyday meaning-making, we believe the present findings afford an important initial look at how existential concerns motivate people to view their actions as abstractly significant and integrated across time. In doing so, we hope to help explain why humans desire a sense that life is meaningful, both in the context of broader cultural milieus and in the microcontexts of moment-to-moment living.

Notes

1. While many existential threats exist (i.e., meaninglessness, uncertainty, isolation) and may provoke meaning-seeking thought and behavior, TMT authors (Greenberg et al., 2008; Pyszczynski et al., 2006) have argued that death is a uniquely powerful psychological threat because of three unique features: (1) it is what many if not most human biological systems are directed toward forestalling; (2) it is the only inevitable future event; and (3) it threatens to eliminate the fulfillment of all human motives whether for pleasure, control, achievement, power, competence, growth, identity, certainty, meaning, affiliation, belonging, attachment, and so on. Accordingly, as the present experiments tested hypotheses derived from TMT, we explored the process of imbuing everyday action with meaning as a response to what this theory and its associated research program have identified as the primary motivational basis of humans' existential struggle for meaning.
2. Analyses for all studies were originally conducted with participant sex as a between-subjects factor. In Study 1 we observed an unexpected effect such that women endorsed more high-level identifications ($M = 18.50$, $SD = 4.54$) than did men ($M = 14.06$, $SD = 3.30$), $F(1, 26) = 21.64$, $p < .001$. However, the Condition × Sex interaction did not approach statistical significance, $F < 1$, $p = .33$. Also, there were no main effects or interactions involving sex in Studies 2 and 3. Consequently, sex is not reported in subsequent analyses to simplify the presentation of results.

References

Arndt, J., Cook, A., & Routledge, C. (2004). The blueprint of terror management: Understanding the cognitive architecture of psychological defense against death-related thought. In J. Greenberg, S. Koole, & T. Pyszczynski (Eds.), *Handbook of empirical existential psychology* (pp. 35–53). New York: Guilford Press.

Becker, E. (1973). *The denial of death*. New York: Free Press.
Camus, A. (1955). *An absurd reasoning. The myth of Sisyphus and other essays* (pp. 3–49). New York: Vintage.
Castano, E., Yzerbyt, V., Paladino, M., & Sacchi, S. (2002). I belong, therefore, I exist: In-group identification, in-group entitativity, and in-group bias. *Personality and Social Psychology Bulletin*, *28*, 135–143.
Erikson, E. H. (1968). *Identity: Youth and crisis*. Oxford, UK: Norton.
Flanagan, O. (2007). *The really hard problem: Meaning in a material world*. New York: MIT Press.
Frankl, V. E. (1963). *Man's search for meaning*. Boston, MA: Beacon Press.
Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology*, *90*, 351–367.
Greenberg, J., Koole, S. L., & Pyszczynski, T. (2004). *Handbook of experimental existential psychology*. New York: Guilford Press.
Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public self and private self* (pp. 189–212). New York: Springer-Verlag.
Greenberg, J., Pyszczynski, T., Solomon, S., Simon, L., & Breus, M. (1994). Role of consciousness and accessibility of death-related thoughts in mortality salience effects. *Journal of Personality and Social Psychology*, *67*, 627–637.
Greenberg, J., Solomon, S., & Arndt, J. (2008). A basic but uniquely human motivation: Terror management. In J. Shah & W. Gardner (Eds.), *Handbook of motivation science* (pp. 114–134). New York: Guilford Press.
Heidegger, M. (1996). *Being and time*. New York: State University of New York Press. (Originally published 1953).
Heine, S. J., Proulx, T., & Vohs, K. D. (2006). Meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review*, *10*, 88–110.
Kierkegaard, S. (1997). The sickness unto death. In H. Hong & E. Hong (Eds.), *The essential Kierkegaard* (pp. 350–372). Princeton, NJ: Princeton University Press. (Original work published 1848).
Kosloff, S., & Greenberg, J. (2009). Pearls in the desert: Death reminders provoke immediate derogation of extrinsic goals, but delayed inflation. *Journal of Experimental Social Psychology*, *45*, 197–203.
Landau, M. J., & Greenberg, J. (2006). Play it safe or go for the gold? A terror management perspective on self-enhancement and self-protective motives in risky decision making. *Personality and Social Psychology Bulletin*, *32*, 1–13.
Landau, M. J., Greenberg, J., Solomon, S., Pyszczynski, T., & Martens, A. (2006). Windows into nothingness: Terror management, meaninglessness, and negative reactions to modern art. *Journal of Personality and Social Psychology*, *90*, 879–892.
Landau, M. J., Johns, M., Greenberg, J., Pyszczynski, T., Solomon, S., & Martens, A. (2004). A function of form: Terror management and structuring of the social world. *Journal of Personality and Social Psychology*, *87*, 190–210.
Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 1–62). San Diego, CA: Academic Press.
Martens, A., Greenberg, J., & Schimel, J. (2003). *Effects of mortality salience on judgments of anxious and calm individuals*. Unpublished Manuscript, University of Canterbury, Christchurch, New Zealand.
Maxfield, M., Pyszczynski, T., Kluck, B., Cox, C. R., Greenberg, J., Solomon, S., et al. (2007). Age-related differences in responses to thoughts of one's own death: Mortality salience and judgments of moral transgressions. *Psychology and Aging*, *22*, 341–353.
May, R. (1953). *Man's search for himself*. New York: Norton.
McAdams, D. P. (2001). The psychology of life stories. *Review of General Psychology*, *5*, 100–122.

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.

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.

Proulx, T., & Heine, S. J. (2008). The case of the transmogrifying experimenter: Affirmation of a moral schema following implicit change detection. *Psychological Science*, *19*, 1294–1300.

Pyszczynski, T., Greenberg, J., Solomon, S., Arndt, J., & Schimel, J. (2004). Why do people need self-esteem?: A theoretical and empirical review. *Psychological Bulletin*, *130*, 435–468.

Pyszczynski, T., Greenberg, J., Solomon, S., & Maxfield, M. (2006). On the unique psychological import of the human awareness of mortality: Themes and variations. *Psychological Inquiry*, *17*, 328–356.

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.

Routledge, C., Arndt, J., Sedikides, C., & Wildschut, T. (2008). A blast from the past: The terror management function of nostalgia. *Journal of Experimental Social Psychology*, *44*, 132–140.

Ryff, C. D., & Singer, B. (1998). The contours of positive human health. *Psychological Inquiry*, *9*, 1–28.

Sani, F. (Ed.). (2008). *Self continuity: Individual and collective perspectives*. New York: Taylor & Francis.

Schimel, J., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., Waxmonski, J., et al. (1999). Support for a functional perspective on stereotypes: Evidence that mortality salience enhances stereotypic thinking and preferences. *Journal of Personality and Social Psychology*, *77*, 905–926.

Schmeichel, B. J., & Vohs, K. D. (2009). Self-affirmation and self-control: Affirming core values counteracts ego depletion. *Journal of Personality and Social Psychology*, *96*, 770–782.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*, 403–421.

Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review*, *94*, 3–15.

Vallacher, R. R., & Wegner, D. M. (1989). Levels of personal agency: Individual variation in action identification. *Journal of Personality and Social Psychology*, *57*, 660–671.

van den Bos, K., Poortvliet, P. M., Maas, M., Miedema, J., & van den Ham, E. (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.

Watson, D., & Clark, L. A. (1994). *The PANAS-X manual for the Positive and Negative Affect Schedule—Expanded form*. (Retrieved 24 August 2004, from the University of Iowa website: http://www.psychology.uiowa.edu/Faculty/Watson/PANAS-X.pdf)

Wegner, D. M., Vallacher, R. R., Kiersted, G., & Dizadji, D. (1986). Action identification and the emergence of social behavior. *Social Cognition*, *4*, 18–38.