
Creative Terror Management: Creativity as a Facilitator of Cultural Exploration After Mortality Salience

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Research indicates that people respond to the elicitation of death thoughts by dogmatically defending their cultural worldviews. The current research examines the potential for conditions of creativity, a construct associated with open-mindedness, to promote a more explorative reaction to the threat of death thoughts. In Studies 1 and 2, thoughts of death or a control topic were activated and then participants engaged in either a creative or a control task. In Study 3, thoughts of death or a control topic were activated and then participants were presented with information suggesting that creativity is or is not culturally valued. After these conditions, social, intellectual, and environmental exploration (Study 1) and cultural worldview exploration (Studies 2 and 3) were measured. Results indicated that both engaging in a creative task and being informed that creativity is culturally valued facilitated exploration in response to thinking about death. Conceptual and applied implications are discussed.

Keywords: *terror management; mortality salience; creativity; exploration*

Terror management theory (TMT; Solomon, Greenberg, & Pyszczynski, 1991) proposes that the awareness of mortality motivates efforts to construe the self as part of something broader, more meaningful, and longer lasting than one's own physical existence and that humans accomplish this goal by turning to their cultural belief systems (worldviews). In accord with this reasoning, studies have demonstrated that conditions that heighten death awareness (mortality salience [MS]) increase investment in and defense of one's worldview. Unfortunately, heightened defense of worldviews after

reminders of mortality often manifest as derogation of and aggression against those who subscribe to different social, political, or religious beliefs (see Pyszczynski, Solomon, & Greenberg, 2003).

Notably, as has been long suggested by humanistic and other such perspectives (e.g., Erikson, 1968), people may also find meaning in life and feelings of self-transcendence by seeking out new experiences and exploring different cultural worldviews (e.g., Bauer, McAdams, & Sakaeda, 2005; Ryan & Deci, 2000, 2004). Yet this more explorative approach to the problem of mortality may, for many, not be the most natural response (Rank, 1932/1989). This poses the question: How can MS-induced strivings be directed toward the exploration of different ideas and experiences instead of the rigid defense of one's own cultural way of life? Though some past research provides clues to answering this question (e.g., Cozzolino, Staples, Meyers, & Samboceti, 2004; Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992; Routledge, Arndt, & Sheldon, 2004), theory and research has not directly addressed this possibility. The current research builds on this previous work to examine the novel potential for different conditions of creativity to foster cultural worldview exploration as a defense against the threat of death awareness.

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TMT and Cultural Worldview Defense

Human beings realize that despite all efforts to thrive as organisms, life is finite. According to TMT (e.g., Solomon et al., 1991), one human response to death awareness is investment in cultural worldviews or belief systems that mitigate concerns about death by providing a symbolic self that is perceived as a meaningful entity that transcends the biological confines of the physical self. Consistent with this proposition, an extensive literature converges to indicate that undermining peoples' worldviews increases the accessibility of death-related thoughts (Schimel, Hayes, Williams, & Jahrig, 2007), that the activation of death-related thoughts increases cultural worldview defense and self-esteem striving (efforts to live up to worldview standards), and that in the face of mortality concerns, bolstering of one's cultural worldview or self-esteem reduces both the accessibility of death-related cognition and the need for additional psychological defenses (see, e.g., Arndt, Cook, & Routledge, 2004; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004, for reviews).

When considering the empirical support for TMT, one feature that is prevalent among much of the literature is that the cultural worldview defenses that provide psychological security are often socially and personally problematic. For example, people who are asked to think about their mortality, compared to individuals who are asked to think about an aversive but non-death-related topic (e.g., dental pain, severe physical pain, social exclusion, personal failure) demonstrate increased negative attitudes toward and physical aggression against members of other social or cultural groups (e.g., Greenberg et al., 1990; McGregor et al., 1998). Recent research has shown that people may even be willing to sacrifice their own lives to defend their cultural worldview after MS in an effort to preserve an enduring symbolic self (Pyszczynski et al., 2006; Routledge & Arndt, 2008).

The present research questions whether people can seek to manage the awareness of mortality in less rigid, dogmatic, and socially and personally problematic ways. Specifically, can MS-induced strivings be directed toward exploration of different cultural perspectives? If so, under what conditions is this alternative method of terror management likely to occur?

Activating Alternative Defenses: Explorative Terror Management

When considering the potential for people to be directed toward cultural worldview exploration as a response to the threat of mortality, it is important to consider the flexibility of the terror management system. Previous research indicates that people can be directed

both away from and toward different meaning-providing beliefs and social identifications when responding to concerns about death (e.g., Arndt, Greenberg, Schimel, Pyszczynski, & Solomon, 2002; Dechense, Janssen, & van Knippenberg, 2000; Greenberg et al., 1992). For example, Greenberg et al. (1992) found that making salient the value of tolerance decreased tendencies to react to different others negatively after MS. However, is it plausible to assert that, given the tendency for MS to trigger cultural worldview defense, people would turn to exploration as a response to thoughts of mortality?

Theoretically, there is reason to suspect that exploration may offer a viable terror management strategy. Many people value being exposed to and exploring new experiences, foods, customs, and cultures, and such exploration may provide fulfillment, growth, and meaning. Indeed, a range of theoretical perspectives suggest that people are motivated not only to cling to the world they know but also to explore the world they do not know (e.g., Aron, Paris, & Aron, 1995; Erikson, 1968; Fredrickson, 2001; Lyubomirsky, King, & Deiner, 2005; Rank, 1932/1989) and researchers have asserted that such strivings for growth and self-expansion may provide existential meaning (Ryan & Deci, 2004). Furthermore, exploring different cultures and groups may help people feel better connected to a larger social fabric (Ryan & Deci, 2000) or facilitate a sense of common humanity (i.e., a superordinate group identity; Gaertner, Mann, Murrell, & Dovidio, 1989) that provides a broader and more enduring sense of self. For example, studies derived from the common ingroup identity model indicate that people can be directed toward recategorizing smaller ingroups into larger and more inclusive groups (see Gaertner & Dovidio, 2000, for a review) and research derived from TMT indicates that self-transcending group identifications provide protection from death concerns (Castano, Yzerbyt, Paladino, & Sacchi, 2002). Thus, exploration may facilitate a broader collective self, as well as a self that satisfies core, intrinsic values, which in turn provides the sense of meaning and symbolic immortality needed when death thoughts are accessible. This poses the question: What conditions might orient individuals toward exploring alternative beliefs as a defense against mortality concerns? Theory and research suggests that one method that could be employed to direct people toward explorative terror management is the facilitation of creative thinking.

Creativity as a Facilitator of Explorative Terror Management

Creativity, by definition, implies a readiness to think flexibly and divergently, and various learning, developmental, and motivational perspectives link creativity to

open-mindedness and divergent thinking (e.g., Amabile, 1983; Deci & Ryan, 1987; Gardner & Moron, 1990; Koestner, Ryan, Bernieri, & Holt, 1984). These different literatures focus primarily on creativity as an outcome of flexible, open-minded, and autonomy-supportive environments; however, they suggest that flexible thinking and creative processes are interconnected. For example, Koestner et al. (1984) found that children who were given instructions on a painting task that restricted their freedom to approach the task openly were significantly less creative than children who were given the freedom to approach the task in a flexible or open manner.

Cognitive theories of creativity, in particular, suggest that creativity may increase open-mindedness and explorative thinking. Creativity involves the use of divergent thinking strategies and expanded mental searches for novel cognitions (Chi, 1997; McCrae, 1987; Ohlsson, 1992). Consistent with this notion, McCrae (1987) found that scores on divergent thinking tests (e.g., generating original words in a synonym task) were significantly correlated with Gough's (1979) Creative Personality Scale (a self-report measure of creative tendencies). Others have similarly suggested that creative insight involves an expanded search for novel ideas (Ohlsson, 1992) and is accompanied by signs of increased neural connections (see Dacey & Lennon, 1998). Recent social cognitive experiments directly support the position that creativity can lead to more open-minded thinking by showing that priming creativity decreases the automatic activation of stereotypes (Sassenberg & Moskowitz, 2005). For example, in one study, Sassenberg and Moskowitz (2005) found that simply asking participants to describe three situations in which they behaved creatively, compared to a condition in which participants were asked to describe three situations in which they behaved thoughtfully, decreased response times to stereotypic target words (e.g., *lazy*, *violent*) after being primed with pictures of African Americans.

Creativity thus appears to foster flexible or open-minded thought processes; however, is it plausible that inducing creative processes would lead to exploration after MS given that individuals often respond to death-related ideation by rigidly defending the world they know? A recent study by Routledge et al. (2004) suggests this possibility merits further attention. Routledge et al. found that after MS, asking American participants to design a creative T-shirt, compared to a condition in which participants were asked to outline a picture of the room they were in, increased positive reactions to an essayist who criticized American culture. This study offered preliminary evidence that conditions of creativity may motivate cultural exploration in response to MS; however, it did not directly test this possibility.

In the current research, it is argued that creativity may direct individuals toward cultural worldview explorative strivings as a response to the activation of death thoughts. This proposition is examined in the present work in two distinct ways. First, following Routledge et al. (2004), the current research examines the potential for creative behavior to increase exploration after reminders of death. If this proposition is supported, another question is whether actually engaging in creative behavior is necessary or whether simply priming the cultural value of creativity is sufficient to engage such an effect. Research has demonstrated that making salient cultural standards of value can direct individuals toward employing those standards to manage death concerns. Therefore, simply making people aware of the cultural value of creativity may encourage the adoption of a creative mindset that could produce effects similar to having people actually engage in creative behavior. The second proposition explored in this research is the potential for a condition that makes salient the value of creativity, in the absence of actual creative engagement, to increase exploration after MS.

STUDY 1

Study 1 examines the potential for creative behavior to increase interest in exploring new ideas and experiences after MS. In this study, thoughts of death or an aversive experience were made salient, and then participants were asked to engage in a creative task or a control task. Subsequently, exploration was assessed (Green & Campbell, 2000). If creativity can direct people toward exploration as a psychological defense against death thoughts, participants in the MS condition who complete the creative task, relative to other conditions, should demonstrate heightened interest in exploring new ideas and experiences.

Method

Participants and Procedure

Forty-two undergraduate students (15 males, 25 females, 2 unidentified) at the University of Missouri (MU) participated in exchange for partial course credit. Initial analyses found no effects involving gender (all $ps > .36$). At the start of the experiment, participants were told that the study involved exploring the relationship between personality traits and cognitive abilities. Each of the measures and conditions is described below in the order presented.

Materials

Salience condition. Half of the participants were randomly assigned to the MS condition and the other

half were assigned to the dental pain control condition. The MS treatment (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon 1989) entailed having participants respond to two open-ended questions: "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." The dental pain control treatment consisted of parallel questions with respect to the experience of dental pain. Based on findings that worldview defenses in response to MS are most pronounced after a delay because of an initial suppression of death-related thoughts (see Arndt et al., 2004), participants completed a mood scale (Positive and Negative Affect Schedule [PANAS]; Watson & Clark, 1991) that served as a delay task between the salience condition and subsequent conditions.¹

Task condition. On the next page of the packet, half of the participants received the creative task condition. In this creative task, participants were asked to design a T-shirt with the goal of being as creative as possible (see Routledge et al., 2004). Participants were provided with a page of paper that has an outline of a T-shirt on it and a box of colored markers. In the control condition, participants were asked to draw an outline of the room using the markers provided. Participants were instructed to take no more than 7 min to complete these tasks.

Dependent measure. The dependent measure was an exploration scale (Green & Campbell, 2000) consisting of 18 items that relate to interests in a variety of exploration activities (e.g., "I would like to explore the ideas of foreign cultures"). Green and Campbell (2000) used this scale to measure both trait and state differences in general exploration tendencies; therefore, for the current study we employed the instructions designed to assess state changes (in this case, as a function of experimental conditions). Specifically, participants indicated to what extent each statement represented them at that moment on an 8-point scale (1 = *not at all*, 8 = *very much*). Green and Campbell found the items to form a reliable index ($\alpha = .81$) and found that exploration was negatively correlated with both the anxiety and avoidance attachment subscales (Simpson, Rholes, & Nelligan, 1992). The 18 items also formed a reliable index in the current sample ($\alpha = .89$). Although Green and Campbell considered the measure to be a general index of exploration, they also designed the scale to specifically assess three distinct domains of exploration (social, intellectual, and environmental) and thus the 18-item measure can be divided into three 6-item subscales. The social exploration subscale includes items such

as "I would like to have the chance to meet strangers" ($\alpha = .83$). The intellectual exploration subscale includes items such as "If given the chance, I would enjoy exploring unusual ideas or theories" ($\alpha = .74$). The environmental exploration subscale includes items such as "I would like to explore someplace that I have never been before" ($\alpha = .69$).

Results and Discussion

To test the hypothesis that the juxtaposition of MS and creativity will increase exploration, a 2 (salience: mortality vs. dental pain) \times 2 (task: creative vs. control) ANOVA was conducted on the exploration measure. The only effect that emerged was the predicted Salience \times Task interaction, $F(1, 37) = 7.71, p = .008$ (see Figure 1). As hypothesized, after being reminded of mortality, participants in the creative condition reported higher levels of exploration than participants who were not given the chance to be creative, $F(1, 18) = 4.43, p = .049$. In contrast, within the dental pain condition, there was a marginal trend in the other direction, $F(1, 19) = .339, p = .081$. Furthermore, within the creative condition, participants reminded of their mortality showed higher levels of exploration than dental pain participants, $F(1, 19) = 6.30, p = .021$. In the absence of the creativity treatment, however, MS and dental pain participants did not differ, $F(1, 18) = 1.94, p = .181$, though there was a slight trend for less exploration among MS participants.

In addition to general exploration, we tested effects on each of the three subscales. For the social exploration subscale, the interaction between conditions was marginal, $F(1, 37) = 2.87, p = .10$. The predicted interaction, however, was significant for both the intellectual exploration subscale, $F(1, 37) = 5.36, p = .026$, and the environmental exploration subscale, $F(1, 37) = 11.23, p = .002$. For all subscales, the general pattern of data was similar to the results on general exploration (see Figure 1).

To assess whether the effect of the creativity condition after MS was due to the actual level of creativity expressed (and not the open-minded and divergent thinking that the creative task initiates), we had two coders blind to conditions rate how creative they thought each T-shirt design was in the creativity condition (Amabile, 1983) on a 5-point scale (1 = *not at all creative*, 5 = *very creative*). The coders' ratings were significantly correlated ($r = .61, p < .05$) and thus combined. An ANCOVA was conducted in which the effects of MS on exploration were assessed, treating level of creativity as a covariate. The only effect that emerged was similar to the previous effect of MS on exploration within the creativity task, $F(1, 18) = 5.76, p < .05$. Reminders of mortality increased exploration even when

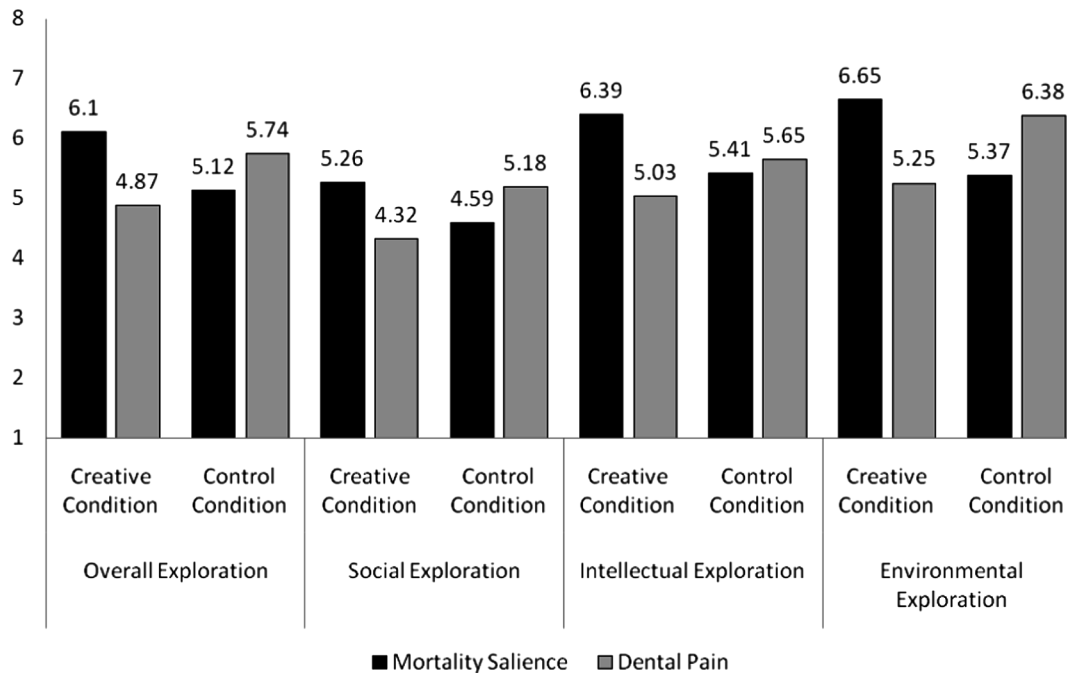


Figure 1 The effects of mortality salience and creativity task on overall exploration and subscales of exploration in Study 1. NOTE: Higher scores indicate greater levels of exploration.

controlling for level of creativity expressed in the task. This suggests that the effects observed on the exploration scale are not simply caused by the creative task increasing creative responses, for this interpretation would likely predict that controlling for creativity levels would eliminate the effect on exploration responses.

Study 1 provides initial support for the assertion that people can be directed toward a more open-minded and explorative response to reminders of mortality. The predicted effects were found on an established measure of exploration and thus provide promising evidence that exploration can serve terror management needs. However, much of the research that suggests that people respond to MS rigidly, not flexibly, focuses on cultural worldviews related to nationalism and religion. Although several of the items in the exploration measure used in the current study relate to cultural beliefs, particularly those on the intellectual and environmental subscales that evidenced the strongest effects, this measure does not focus on exploration of alternative cultural beliefs. In fact, although the pattern of data was in the predicted direction, the weakest effect was on the more general social exploration (e.g., wanting to meet new people) subscale and thus suggests that the dimensions of exploration that are most related to cultural worldviews will be most affected by the juxtaposition of MS and creativity. Therefore, it is important to more specifically test the

assertion that creativity can foster cultural worldview exploration after MS. Studies 2 and 3 provide this test.

STUDY 2

In Studies 2 and 3 we endeavor to connect the current research more explicitly to previous work on culturally relevant beliefs by examining the potential for creativity to increase interest in exploring an alternative cultural worldview after MS. Toward this end, we created a measure that assessed participants' interest in exposing themselves to alternative cultural viewpoints. Specifically, participants read that MU has been working with a local independent film cinema to develop a series of documentary films to bring to MU and that students are being asked to complete a survey that assesses interest in films, based on brief descriptions, that could be part of that series. Each potential film was designed to involve a subject that challenges basic cultural beliefs that are predominant in the United States, particularly in the Midwest. In Study 2, we focused on nationalistic worldview exploration, and in Study 3 we focused on religious worldview exploration.

Because this represents a novel approach to measuring worldview exploration, the measure could be open to alternative interpretations. For example, participants

might express interest in a film not because of explorative curiosity but to try and discount or discredit it, or their reactions to the films could be influenced by the films' perceived endorsement by the participants' university, or their reactions could be influenced by participants' perceptions of the current state of nationalistic affairs. As such, we first present supplemental data that seek to inform how these measures of exploration relate to the established measure of exploration used in Study 1 along with another measure related to this construct (i.e., openness to experience).

Fifty undergraduate students (14 male, 33 female, 3 unidentified) from the University of Missouri-Columbia completed the nationalistic worldview exploration measure used in Study 2 ($\alpha = .83$) and the religious worldview exploration measure used in Study 3 ($\alpha = .83$). For both topics, participants evaluated two respective film descriptions that offer alternative viewpoints on American foreign policy and American ethnocentrism, and religious belief.² After reading each description, participants were asked, using 7-point scales, two evaluative questions designed to assess how interested they were in exploring alternative cultural ideas ("How interested are you in seeing this documentary?" and "If MU did bring this documentary to campus, how likely is it that you would go see it?"). Participants also completed the Green and Campbell (2000) exploration scale used in Study 1 ($\alpha = .90$) and a measure of openness to experience (Costa & McCrae, 1992; e.g., "I have a lot of intellectual curiosity"; $\alpha = .83$). First, our two measures of cultural worldview exploration (nationalistic and religious) were strongly correlated ($r = .59, p < .001$). Second, critically, the nationalistic exploration measure correlated with the Green and Campbell measure ($r = .42, p < .05$) and openness to experience ($r = .39, p < .05$). Similarly, the religious exploration measure used in Study 3 correlated with the Green and Campbell measure ($r = .57, p < .001$) and openness to experience ($r = .53, p < .001$).

Taken together, these correlation patterns provide preliminary evidence that the worldview exploration measure to be used in Studies 2 and 3 does in fact tap into explorative interests. For both nationalistic and religious dimensions, interest in seeing films espousing alternative viewpoints correlated significantly with general exploration as measured by the Green and Campbell (2000) scale, as well as with openness to experience. Thus, we now proceed to examine the effect of creative engagement and MS on such interests. Specifically, in this next study, thoughts of death or an aversive experience were made salient, and then participants were asked to engage in a creative task or a control task. Subsequently, interest in learning more about an alternative cultural belief system was assessed. If creativity can direct people toward

cultural exploration as a psychological defense against death thoughts, participants in the MS condition who complete the creative task, relative to other conditions, should demonstrate heightened interest in learning about an alternative cultural worldview.

Method

Participants and Procedure

Eighty-five undergraduate students (30 males, 48 females, 7 unidentified) at MU participated in exchange for partial course credit. Two participants did not complete all of the materials, leaving a final sample of 83 participants. Initial analyses found no effects involving gender (all $ps > .43$). At the start of the experiment, participants were told that the study involved exploring the relationship between personality traits and cognitive abilities. In addition, participants were told that the study would not take the entire allocated hour to complete and that the university has been having researchers ask participants to take part in a survey that will help the university plan future events for students. Each of the measures and conditions is described next in the order presented.

Materials

Salience condition. As in Study 1, half of the participants were randomly assigned to the MS condition and the other half were assigned to the dental pain control condition. All participants then completed a mood scale (PANAS; Watson & Clark, 1991) that served as a delay task between the salience condition and subsequent conditions.

Task condition. On the next page of the packet, as in Study 1, half of the participants received the creative T-shirt task condition and half received the control task condition.

Dependent measure. The dependent variable was the film interest measure previously described. In this study, we focused on nationalistic worldview exploration (i.e., alternative viewpoints on American foreign policy and American ethnocentrism).³ There were a total of two worldview-related film descriptions and two evaluative questions per film (i.e., four nationalistic worldview explorative items). A reliability analysis indicated that these items formed a reliable index ($\alpha = .81$); therefore, they were averaged to create a nationalistic worldview exploration variable. In addition to these worldview-relevant films, two additional film descriptions that were unrelated to worldview were

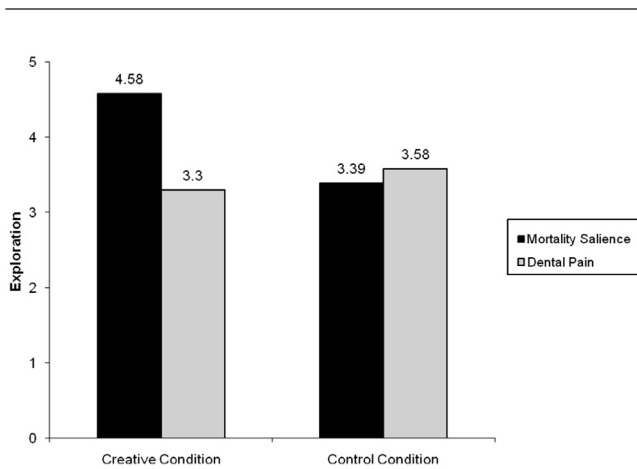


Figure 2 The effects of mortality salience and creativity task on exploration in Study 2.

NOTE: Higher scores indicate greater levels of cultural worldview exploration.

included between the two worldview-relevant film descriptions to reduce potential suspicion about the survey and to allow us to assess the specificity of the predicted effects. These films, respectively, covered the topic of interesting, practical inventions and the increasing popularity of reality television.

Results and Discussion

To test the hypothesis that the juxtaposition of MS and creativity will increase cultural worldview exploration, a 2 (salience: mortality vs. dental pain) \times 2 (task: creative vs. control) ANOVA was conducted on the film exploration measure. The only effect that emerged was the predicted Salience \times Task interaction, $F(1, 80) = 6.52, p = .01$ (see Figure 2). Simple mean comparisons were conducted to unpack this interaction. As hypothesized, after being reminded of mortality, participants in the creative condition reported higher levels of interest in the worldview-challenging films than participants who were not given the chance to be creative, $F(1, 38) = 9.35, p = .004$. In contrast, within the dental pain condition, there was no effect of the creativity manipulation, $F(1, 42) = .44, p = .51$. Furthermore, within the creative condition, participants reminded of their mortality showed higher levels of interest than dental pain participants, $F(1, 39) = 8.42, p = .006$. In the absence of the creativity treatment, however, MS and dental pain participants did not differ, $F(1, 41) = .26, p = .61$.

As in Study 1, two coders rated level of creativity in the T-shirt task condition ($r = .65, p < .001$) and an ANCOVA was conducted examining the effect of salience on exploration, controlling for level of creativity.

Consistent with Study 1, the only effect that was found was similar to the previous salience effect, $F(1, 38) = 4.16, p < .05$. Within the creative task, MS increased exploration even when controlling for level of creativity expressed.

To test the specificity of this effect, we combined the four items from the two nonthreatening film descriptions ($\alpha = .88$). We then conducted the same 2 \times 2 ANOVA and found no indication of any emerging main or interactive effects (all $ps > .32$). Thus, the juxtaposition of MS and the creativity manipulation does not affect interest in any film but only films that have cultural worldview relevance. This suggests that participants' ratings were not simply showing increased interest in films that could conceivably be construed as endorsed by their university.

Thus, it appears that when engaging psychological defenses in response to cognitions about death, individuals can be directed toward learning about different cultural perspectives. Such reactions are obviously quite different from the more typical rigidity with which participants have responded to MS in previous research and builds on earlier work by Routledge et al. (2004) to highlight the utility of creative behavior in efforts to promote more open-minded thinking when managing existential fears.

There are, however, some issues with the study that merit comment. Participants in the MS/noncreative condition, relative to their dental pain counterparts, did not respond more negatively to the films that implied a critical stance toward American policies. Previous terror management work has found that after MS, participants are generally more negative in their evaluations of others who threaten nationalistic beliefs (e.g., Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). There are a couple of notable differences, however, between the present film interest measures and the reactions to an anti-American message observed in prior research. Indeed, prior research has used targets that much more explicitly disparage nationalistic identification. In this research, we presented films that offered a critical, but explorative, look at different features of American practices. Second, unlike previous research, we did not ask participants to evaluate the films but rather to express their interest in seeing the films. Taken together, participants in the MS/noncreative condition may not have felt any press to disparage the film and may have simply reacted by expressing lukewarm interest, as reflected by their scores near the midpoint of the scale. Explorative curiosity may then have been heightened by the juxtaposition of MS and the creative task, as reflected by participants indicating higher scores on this measure.

Indeed, the present analysis posits that creative behavior serves this exploration-promoting function because of

its association with divergent thinking and cognitive flexibility. That is, the creative task may activate a more open-minded or flexible terror management strategy. However, in this study and the previous research by Routledge et al. (2004), the manipulation involved behavioral engagement in a creative task. Therefore, it is not clear whether the actual expression of creativity is needed to produce this effect or whether a less engaging creativity manipulation could lead to a similar outcome. Can simply making salient the value of creativity foster cultural exploration after MS? This is the question examined in Study 3.

STUDY 3

Previous research indicates that people can be directed toward specific cultural values after the provocation of death-related thought by situational cues (e.g., advertisements) that make salient those values. For example, recent research that focuses on decreasing unhealthy tanning behavior demonstrates that when mortality concerns have been triggered experimentally, women indicate increased interest in tanning products if exposed to an advertisement or magazine article that suggests that tanned skin is culturally valued and decreased interest in such products if exposed to a magazine article that suggests that pale skin is culturally valued (Arndt et al., 2008; Routledge, Arndt, & Goldenberg, 2004). These and similar findings (e.g., Greenberg et al., 1992) suggest that making salient the cultural value of creativity may promote a creative mindset and thus produce effects similar to those found in Studies 1 and 2 in which participants engaged in a creative task.

To test this possibility, in the current study, thoughts of death or an aversive experience were made salient, and then participants were provided with one of two paragraphs. Participants in the creativity is valued condition read a paragraph indicating that creativity is important and highly valued in American culture whereas participants in the creativity is not valued condition read a paragraph indicating that creativity is not particularly valued or important in American culture. Subsequently, similar to Study 2, interest in learning more about an alternative cultural belief system was assessed. To expand the breadth of this analysis, in Study 3 we focused on religious worldview exploration. If making salient the notion that creativity is valued can direct people toward cultural exploration as a defense against death thoughts, participants in the MS condition who read the paragraph suggesting creativity is valued, relative to other conditions, should demonstrate heightened interest in learning about an alternative cultural worldview.

Method

Participants and Procedure

Forty-four undergraduate students (22 males, 21 females, 1 unidentified) at MU participated in exchange for partial course credit. Initial analyses found no effects involving gender (all $ps > .34$). Participants were provided with the same cover story used in Study 2. Each of the measures and conditions is described next in the order presented.

Materials

Salience condition. As in Studies 1 and 2, half of the participants were randomly assigned to the MS condition and the other half were assigned to the dental pain control condition. All participants then completed a mood scale (PANAS; Watson & Clark, 1991) that served as a delay task between the salience condition and subsequent conditions.

Creativity worldview condition. On the next page of the packet, participants received one of two creativity worldview conditions. Half of the participants received the creative is culturally valued condition and the other half received the creative is not culturally valued condition.⁴ These conditions were designed to bolster or undermine the notion that creativity is an important and valued aspect of American culture. For example, the creativity is valued condition contained the following text:

A recent nationwide survey found that a majority of American citizens and major corporations believe that creativity is an ability that is more important than other personal skills. Similarly, research conducted by Princeton University and the Rand Research Corporation indicates that being creative is actually very effective at helping people find success in America. These findings support the popular assumption that creativity is highly valued in American culture

The creativity is not valued condition contained the following text:

A recent nationwide survey found that a majority of American citizens and major corporations believe that creativity is an ability that is not nearly as important as other personal skills. Similarly, research conducted by Princeton University and the Rand Research Corporation indicates that being creative is actually not very effective at helping people find success in America. These findings suggests that despite the popular assumption that creativity is highly valued and important in American culture, creative abilities are a lot less valued and important than other cognitive abilities

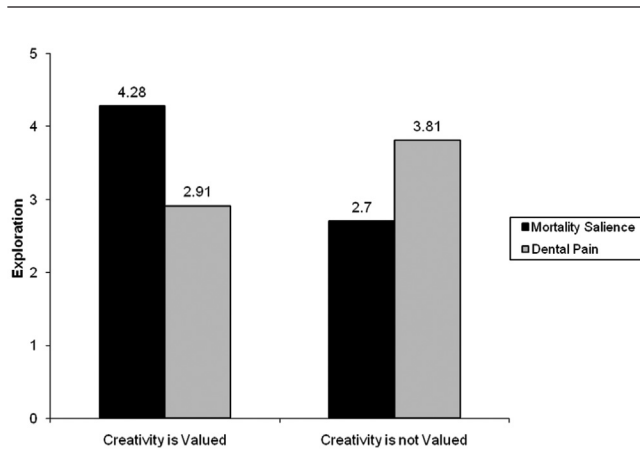


Figure 3 The effects of mortality saliency and cultural values manipulation on exploration in Study 3.

NOTE: Higher scores indicate greater levels of cultural worldview exploration.

To reduce suspicion and integrate the manipulation into the cover story, at the end of each paragraph was a statement indicating that this study was further assessing the importance of different cognitive abilities and that the next task related to this objective. The next page was the room outlining task used as a control condition in Studies 1 and 2.

Dependent measure. The dependent measure was similar to the measure used in Study 2 but focused on religious worldviews to ascertain whether the explorative effects of creativity are exclusive to a specific type of cultural worldview exploration. Participants were presented with two films that offered alternative viewpoints regarding predominant cultural worldviews related to religion in America. These items were combined to create a religious worldview exploration variable ($\alpha = .74$). The same two worldview unrelated films used in Study 2 were used in the current study.

Results and Discussion

A 2 (saliency: mortality vs. dental pain) \times 2 (worldview: creativity is valued vs. creativity is not valued) ANOVA was conducted on the religious worldview exploration measure. There were no main effects; however, as predicted, a significant Saliency \times Worldview interaction emerged, $F(1, 39) = 9.49, p = .004$ (see Figure 3). To further explore this interaction, simple mean comparisons were conducted. First, participants who were reminded of their mortality and then read that creativity is valued demonstrated greater levels of interest in the critical films than did participants reminded of their mortality who read that creativity is

not valued, $F(1, 19) = 8.38, p = .009$. In contrast, after writing about dental pain, the creativity is valued and creativity is not valued conditions did not differ, $F(1, 20) = 2.71, p = .12$. Also, within the creativity is valued condition, MS participants reported greater interest in the critical films than did their dental pain counterparts, $F(1, 18) = 10.73, p = .004$. Finally, within the creativity is not valued condition, MS and dental pain participants did not differ, $F(1, 21) = 2.16, p = .16$.

We also conducted the same 2×2 ANOVA on the four items measuring interest in non-worldview-relevant films ($\alpha = .84$) and found no indication of any emerging main or interactive effects (all $ps > .44$), suggesting again that the observed effects are specific to interest in worldview-related films.

The findings of Study 3 offer a refined understanding of the effects that emerged in Studies 1 and 2. Given the procedures of Studies 1 and 2, as well as Routledge, Arndt, and Sheldon (2004), it was possible that actual engagement in a creative activity is necessary to facilitate explorative terror management. However, drawing from previous research showing that priming specific values, in the absence of any behavioral engagement, is sufficient to influence reactions to MS, we reasoned that actual engagement in creative expression may in fact not be necessary. In accord with this view, Study 3 found that explorative terror management can be promoted by simply highlighting the cultural value of creativity. Notably, the present study significantly extends the previous work on priming specific values. In previous work, the value prime was fairly direct and explicitly related to the response assessed. For example, in Greenberg et al. (1992), tolerance was primed, and participants were subsequently more tolerant toward a target who disparaged their country. In this study, however, the value of creativity was primed, and the less explicitly connected reaction of interest in alternative religious views was observed. As reviewed in the Introduction, this activation may occur because of the unique propensity for a creative mindset to foster open-minded and flexible thinking.

GENERAL DISCUSSION

Empirical research indicates that cognitions about death lead people to support and defend the cultural world that provides them with a larger sense of meaning and self-transcendence. The current research builds on this basic tenant of TMT to suggest that defenses in response to thoughts about mortality can be culturally explorative instead of culturally dogmatic. In Study 1, engaging in a creative task led participants to respond to thoughts of death with increased interest in exploring a

variety of experiences such as studying abroad and learning about different theories and beliefs. In Study 2, a parallel pattern of data emerged when the focus was on exploration of different nationalistic viewpoints. In Study 3, a similar effect was found concerning religious exploration when participants were primed with the idea that creativity is highly culturally valued. Together, these three studies, using different measures of exploration focused on distinct domains, extend previous terror management reactions beyond the dogmatic affirmation of existing beliefs and advance the possibility that people can maintain psychological security by exploring other cultural worldviews. To the extent that openness to learning about different ideas is a vital foundation of tolerance and acceptance of alternative views, the present results suggest that the construct of creativity can play an important role in promoting more socially and personally advantageous psychological defenses.

Explorative Self-Defenses: Protection Through Expansion

In recent years, numerous studies from diverse theoretical perspectives converge to suggest that people respond to psychological threats by becoming more conservative, dogmatic, and focused on ensuring that their cultural world is highly structured, certain, and predictable. Said differently, people do not typically respond to threat by becoming more explorative. In the context of terror management work, in addition to the typical MS-induced worldview defense findings described previously (see, e.g., Greenberg, Solomon, & Pyszczynski, 1997), meta-analytic research by Jost, Glaser, Kruglanski, and Sulloway (2003) found that death-related ideation predicted increased political conservatism, which these authors argue is closely associated with close-mindedness. Similarly, a line of research by Landau et al. (2004) suggest that the psychological resonance of death-related thought can increase rigidity and close-mindedness. For example, reminders of mortality led to a primacy effect such that participants made judgments of others based on the first information they received about them, discounting further contradictory information (Landau et al., 2004). Perhaps more directly supporting the notion that MS typically inhibits explorative or flexible thinking, Greenberg, Simon, Porteus, Pyszczynski, and Solomon (1995) found that reminders of mortality decreased peoples' ability to use cultural icons in unconventional ways (e.g., using a crucifix as a hammer) to solve an experimental task. Although we focus on reactions to MS, this general characterization could be levied on a range of psychological threats (e.g., Fein & Spencer, 1997), as people tend not to explore new ideas or cultural perspectives but instead strive to

preserve a sense that their own subjective reality is ultimately valid and other perspectives are invalid. Given the ubiquity of psychological threats that people encounter as they navigate through life, it is likely that such reactions have a potent influence on the historical and contemporary all-too-common manifestations of intergroup strife.

The current research unveils a potential way to counteract such tendencies and direct people toward a less rigid and more explorative defensive tactic. Broadening one's perspective and placing oneself in a larger and more diverse social fabric may help facilitate the sense of meaning and self-transcendence desired when the transience of human mortality is accessible. The current research elucidates ways in which this alternative form of terror management can be induced. When reminded of death, giving people the opportunity to engage in creativity or making salient the notion that creativity is culturally valued led to a heightened interest in exploring a variety of different ideas and experiences generally, and cultural perspectives that run counter to predominant American beliefs specifically. Future research should examine other conditions or individual differences that may have similar effects. Indeed, Cozzolino et al. (2004) found that encouraging a deeper consideration of mortality, and the means of one's death, reversed the tendency for mortality reminders to increase greed and materialistic values, at least among those initially oriented toward extrinsic values (see also Lykins, Segerstrom, Averill, Evans, & Kemeny, 2007). Such findings differ from the current research in that they suggest one way to promote more socially positive responses to MS is by having people confront the threat more openly. However, considering that people tend to prefer a more avoidant response to thinking about death, and death is often made salient in subtle ways that would not promote deeper consideration, it is important to entertain strategies that would promote socially positive terror management when thoughts of death are not being deeply processed. Given that concepts such as creativity, imagination, and innovation are so widely praised in American culture, the current findings, by highlighting the potential social benefits of creativity, may have important applied implications for such circumstances.

The Existential Consequences of Creativity

The current research may also inform understanding of the consequences of creative thought. Most research on the topic of creativity has focused on it as an outcome, not as a predictor variable, considering the individual difference (e.g., McCrae, 1987) and situational variables (e.g., Amabile, 1983; Deci & Ryan, 1987; Friedman & Forster, 2000) that promote creativity. However, there is little research that focuses on the

potential for creativity to affect other variables. In one of the few efforts to examine the consequences of creativity, Arndt and colleagues (Arndt, Greenberg, Solomon, Pyszczynski, & Schimel, 1999; Arndt, Routledge, Greenberg, & Sheldon, 2005) found that creativity that distinguishes people from others can engender guilt and a desire to reconnect with others, presumably because of heightened needs for psychological connection when faced with existential fear. However, with a strong sense of connectedness to others, creativity after reminders of death was found to increase a sense of vitality and well-being. The present work complements such findings by implicating potentially constructive social dynamics in terms of people's openness to alternative views. Given this, and in light of the comparative dearth of research on the consequences of creative thought, future research should continue to explore the potential for valuing creativity to facilitate positive implications for interpersonal and intergroup relations.

Limitations and Future Research

In this vein, there are a number of facets of the present work that invite further study. First, one issue is whether death is the driving force behind the effects in the current research, and terror management research more broadly. In the current studies, we used the control topic of dental pain, which although an aversive experience differs from death in several ways. For example, relative to dental pain, the topic of death is more abstract, semantic, and prospective (vs. retrospective) in nature. Although it is not immediately clear how or why a more prospective threat would engender the effects predicted and obtained here, this could be an interesting issue to examine in future studies. Of course, in considering this issue it may be informative to note that dozens of studies have employed a variety of control conditions that are also abstract, semantic, and prospective (e.g., general uncertainty, future uncertainty, meaninglessness, social exclusion) and have still found that MS produces unique and theoretically consistent effects (see Pyszczynski, Greenberg, Solomon, & Maxfield, in press). In addition, MS has been induced in a number of unique ways that produce theoretically consistent results. For example, some studies have primed death thoughts subliminally (e.g., Arndt, Greenberg, Pyszczynski, & Solomon, 1997) and others have taken advantage of naturalistic cues that activate death thoughts (e.g., being interviewed in front of a funeral home or cemetery; e.g., Pyszczynski et al., 1996). Furthermore, experiments have demonstrated that symbolic self-related defenses covary with the accessibility of death thoughts, which provides additional evidence that responses to MS inductions are related to the problem of death as opposed to being the product of

something specific to the nature of the death writing induction (e.g., level of abstractness). Taken together, although there seems to be a reasonable amount of evidence to suggest that death is at the core of terror management effects, future research should explore how and why other existential and self-related threats may interact with creativity to affect social judgment.

Another generative direction for future research is to consider the extent to which such explorative forms of terror management do indeed provide a sense of self-transcendence, as well as the general underlying assumption in the broader terror management literature that MS is motivating strivings for self-transcendence. Although the present studies cannot speak directly to this possibility, the available literature attests to the self-transcendent motivations provoked by reminders of death. For example, belief in life after death is negatively correlated with death anxiety (e.g., Florian & Kravetz, 1983) and Norenzayan and Hansen (2006) found that MS increased religiosity, belief in God, and belief in divine intervention. Similarly, studies by Dechesne et al. (2003) and Routledge and Arndt (2008) have shown that the belief in an afterlife, or belonging to a group that persists after death (but not a transient group), can reduce the employment of further self-defenses in response to reminders of mortality. A number of other studies fit this analysis, such as MS motivating efforts to maintain the belief that humans are more than mere biological creatures (see Goldenberg, Pyszczynski, Greenberg, & Solomon, 2000). Given this landscape of effects, and the prior literature linking forms of exploration to a sense of existential meaning, one exciting direction of research is to examine more directly how creativity might inspire the use of less dogmatic and more explorative means of self-transcendence.

Aside from these more nebulous issues, there are more tangible issues to consider with the current research. One such issue relates to the measurement of exploration. We have argued that increased interest in films that challenge predominant societal beliefs in Studies 2 and 3 reflects increased explorative strivings. However, is it possible that this increased interest represents something other than exploration? This is an important issue that should be considered in future research. However, in so doing, it may be useful to note that the same pattern or results emerged in Study 1 using an established measure of exploration, and the film exploration measures used in Studies 2 and 3 correlated highly with this established measure, thus suggesting that they were in fact tapping into explorative strivings. Future research could, however, further consider this issue by using other tasks and even behaviors that would reflect exploration as well as assessing baseline interest in various cultural beliefs and reassessing interest after experimental conditions to see actual change in initially identified interests (or lack thereof).

Conclusion

History is unfortunately full of examples in which psychological defenses bare negative and even deadly consequences for those who differ in a perceived meaningful way. The implications of previous terror management research suggest that deeply rooted concerns about mortality can be a potent contributor to such problems. However, there are also examples throughout history in which people explore new ideas and experiences and seek out alternative ways of looking at the world. The latter form of navigating through life would seem to be more socially and personally advantageous in a diverse cultural world that is, through the advancement of technology, becoming both more interconnected and capable of conflict at a global extinction level. However, the juxtaposition of these relatively exploratory and defensive psychological processes has mostly escaped empirical scrutiny. Therefore, integrating these processes and finding the situational forces or life experiences that orient people toward less rigid and more open or explorative interests is perhaps more critical than ever. In this light, the current research offers initial insight into understanding how different conditions can be employed to reduce the potentially negative impact of human efforts to manage anxieties about death.

NOTES

1. Analyses in this study and the two that follow showed no effects of mortality salience (MS) on positive or negative affect ($p > .30$). This is consistent with the prior terror management theory (TMT) literature that has shown that MS does not increase physiological signs of anxiety (see, e.g., Pyszczynski, Solomon, & Greenberg, 2003) and renders an alternative explanation for MS effects based on mood difficult to advance. Furthermore, several studies have not included measures of self-reported affect, which makes it difficult to advance an alternative explanation based on the consequences of completing mood scales.

2. For copies of the cultural exploration measure, contact Clay Routledge at Clay.Routledge@ndsu.edu.

3. The data for Studies 2 and 3 were collected in early fall of 2005 before recent dramatic decreases in American confidence that the nation is going in the right direction. This may be important to note given that, with this recent dramatic decrease, scores on this measure might otherwise reflect dissatisfaction with the current state of the country.

4. For copies of the creativity is valued versus not valued manipulations, contact Clay Routledge at Clay.Routledge@ndsu.edu.

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