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Joking in the face of death: A terror management approach to humor production

Abstract: Terror management theory has spawned a body of experimental research documenting a multitude of defensive responses to mortality salience manipulations (e.g., rigid adherence to dominant cultural values, self-esteem bolstering). Another substantive body of work suggests that humor functions as a natural and often effective means of down-regulating stressful or traumatic experiences. Integrating a terror management paradigm with a cartoon captioning task, the present study finds that participants subliminally primed with death wrote funnier captions than those primed with pain, as judged by outside raters. Interestingly, a reverse pattern was obtained for participants' own ratings of their captions; explicitly death-primed participants rated themselves more successful at generating humorous captions than their pain-primed counterparts, while no significant difference emerged between the two subliminal priming conditions. Findings contribute new insights to recent research suggesting that death reminders may sometimes facilitate creativity and open-mindedness.

Keywords: humor, terror management, mortality, creativity

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1 Joking in the face of death: A terror management approach to humor production

Terror Management Theory (TMT, e.g., Pyszczynski, Greenberg and Solomon 1997) posits that human awareness (whether conscious or unconscious) of the inevitability of death can lead to potentially paralyzing anxiety. To manage or preempt this anxiety, individuals may turn to cultural and psychological defenses that ostensibly offer symbolic ways to transcend death. Indeed, decades of empirical research have shown that priming individuals with their own mortality leads to various negative outcomes that seem predicated on a narrowing of the social psychological lens: increased adherence to nationalistic attitudes (e.g.,

Landeau et al. 2004), derogation of counter-attitudinal outgroup members (e.g., See and Petty 2006), and endorsement of materialistic goals (e.g., Kasser and Sheldon 2000). Presumably, cultural status confers a sense of value in a rule-bound and meaningful social universe, both of which provide relief from the simultaneous certainty of death and the uncertainty of when, how, or why one's death will occur. Interestingly, although increased rigidity of world views seems born of negative vs. positive emotions, a recent study found that mortality salience facilitated unconscious accessibility of and attention to *positive* emotional content, which researchers argue signifies activation of an automatic coping strategy (De Wall and Baumeister 2007). A few additional studies have focused on the conditions under which mortality salience may either lead to or interact with creative thinking (Routledge and Arndt 2009; Routledge, Arndt, Vess and Sheldon 2008). Thus, it is important to consider alternative responses to reminders of death that may implicate a creative, positive emotional mindset. The present study is the first to investigate the impact of death reminders on the creative task of humor production.

Humor production may be particularly relevant to staving off death anxiety, not only because it typically is a culture-bound phenomenon, and hence useful for reaffirming one's place in society, but humor has also been identified as a psychologically useful coping mechanism that enables individuals to remain resilient in the face of aversive life circumstances (Abel 2002; in the case of smiling/laughing during bereavement; Keltner and Bonanno 1997; Martin et al. 1993; Nezu, Nezu and Blissett, 1988). Considered a "high adaptive" defense mechanism by the latest edition of the Diagnostic and Statistics Manual of Mental Disorders (American Psychiatric Association, *DSM-IV-TR* 2000: 75), the capacity to utilize humor in the face of negative experiences lends itself to both positive outcomes and a classification of "trait resilience" by researchers in positive psychology (e.g., Tugade and Fredrickson 2007: 319). Other scholars have underscored situational forces that pull for humor as a coping mechanism, citing the value and frequency of humor production among individuals who are chronically confronted with reminders of mortality, such as medical staff (van Wormer and Boes 2009) or prisoners of war (Henman 2001). Still others have reflected on the evolutionary value of "laughing at death" in response to the "fundamental terrorizing incongruity of mortality awareness in creatures who dream of immortality" (Elgee 2003, p. 479).

In the humor-as-coping literature, Victor Frankl's (1988 [1946]) documentation of how he and others survived the chronic emotional and physical torment of the Holocaust is often referenced. In his preface to Frankl's *Man's Search for Meaning*, Gordon Allport notes that the unimaginable horrors of life in a concentration camp were made tolerable by, among other life-saving coping mechanisms,

“a grim sense of humor” (9), and Frankl himself alludes to humor as “another of the soul’s weapons in the fight for self-preservation” (63). It is significant to conceptualize the role of humor within Frankl’s original contribution of logotherapy – literally “meaning therapy” – a process by which individuals can learn to infuse the random chaos and suffering of everyday life with significance. From this perspective, humor may be conceived of, in part, as a route by which a sense of meaning or control is achieved via adaptive distancing from an otherwise overwhelming situation.

In one of only a handful of studies to experimentally examine the effect of humor generation on stress and negative affect, Newman and Stone (1996) randomly assigned participants to generate humorous vs. serious narrative while viewing a stressful, silent film segment (depicting an industrial accident). Results showed that individuals in the humorous narrative condition reported significantly lower negative affect, showed lower physiological stress indicators, and evidenced faster stress recovery just after the task compared to those in the serious narrative condition. The authors highlight the potential health implications of humor production as a stress-reduction technique. Similarly, Giulini, McRae and Gross (2008) found that instructing individuals to reappraise the amusing film so as to make it more amusing lead to increased perceptions, behaviors and physiological reactivity associated with amusement compared to simply watching the amusing film without instruction. The authors note that such findings clarify the value of being able to consciously “up-regulate” positive emotional experiences in the face of stress and provide empirical support for the role of humor in physical and emotional health (718).

To the extent that down-regulating death anxiety is one of the more primitive tasks facing human beings, and to the extent that humor often appears to mitigate stress, it seems plausible that humor generation may be (adaptively) facilitated, rather than inhibited, by mortality salience primes. Although it may seem counterintuitive in light of the amassed research on terror management theory suggesting the perspective-narrowing impact of death primes, there are a few recent studies that provide converging evidence for our assertion. Specifically, Routledge and Arndt (2009) found that instructing individuals to engage in a creative task (designing a t-shirt) following an explicit mortality salience manipulation led to increased exploration intentions as well as increased interest in “worldview-challenging films” (e.g., a film challenging American ethnocentrism). Their third study found that simply priming individuals with the idea that creativity is culturally valued and associated with “helping people find success in America” increased their interest in films that challenged dominant cultural views on religion. The authors conclude that their findings “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” (502).

A related study looks at creativity as an outcome variable in itself (Routledge, Arndt, Vess and Sheldon 2008). Explicitly death-primed individuals who were given a task to design a rock concert to make money for themselves did so less creatively (as judged by outside raters) than did their pain-primed counterparts when given similar instructions. However, when told the goal was to make money for a charitable organization, death-primed participants did not differ from pain-primed participants in their creativity. The authors note that although the trend was non-significant, the means suggested that “a connectedness-oriented activity may even promote creativity in response to existential threat” (335).

Both of the above-described studies suggest that individuals may need to be instructed to engage in either a creative or communal task in order for death reminders to elicit or at the least not diminish cognitively flexibility. However, a more basic test of the emotional mechanism triggered by death reminders suggests that positive emotional responses may be activated automatically as a coping mechanism against existential terror. De Wall and Baumeister (2007) reason that: “Clutching happy thoughts may serve the function (central to terror management theory) of preventing the conscious mind from being paralyzed by the terror of death” (984). In support of this prediction, a series of studies found that explicitly death-primed individuals showed enhanced accessibility of positive affective information. Individuals primed with thoughts of their own death were more likely to make positive word stem completions and to make more positive emotional associations than semantic associations to a presented target word (e.g., associating “mouth” with “smile” instead of “cheek”) compared to their pain-primed counterparts.

In sum, there is some evidence that individuals may marshal positive emotional and cognitive resources in response to death anxiety, either spontaneously or under certain instructional conditions. Our study builds on this research by integrating literature documenting the adaptive benefits of humor with literature suggesting that creativity and positive thinking may serve as a buffer against death anxiety. Specifically, we explore whether the ability to generate humor is facilitated under mortality salience. We further ask whether the modality of prime is a factor.

1.1 The present study

The current study was undertaken to determine whether individuals are more adept at devising humorous material when primed with thoughts of death com-

pared to thoughts of pain. Pain is a typical terror management control condition because it is aversive yet qualitatively different from death. A second purpose of the present study was to determine whether prime modality, in this case, primes presented subliminally (via computer) or explicitly (via written exercise) would impact humor generation. We assessed humor generation by asking participants generate captions for a series of caption-less cartoons following a filler task. Outside raters, blind to study condition and hypotheses, subsequently rated the captions for perceived humorousness. In addition, we asked the participants themselves to report on their perceived success and subjective ease with which they generated the captions.

Based on the research outlined above, we predicted that individuals primed with death would generate more humorous cartoons (as judged by outside raters) than individuals primed with pain. However, we left open the question of whether subliminal or explicit death reminders would be more likely to facilitate humor generation. In addition, we were interested in determining whether prime (death vs. pain) and/or modality (subliminal vs. explicit) effects would emerge with respect to individuals' perceptions of their own captions. That is, we wanted to clarify whether individuals would perceive their own captions as more successful and/or easy to write as a function of how they were primed.

This study offers the first empirical test of whether death reminders result in more successful humor generation, which would contribute to the small but compelling body of work that suggests that mortality salience spontaneously activates adaptive, creative thinking. This study also offers the first test of whether quality of humor generation would vary as a function of prime modality (e.g., subliminal vs. explicit). Arndt, Greenberg, Pyszczynski and Solomon (1997) found evidence that subliminal reminders of death aroused stronger defenses than those that were activated explicitly (e.g., greater endorsement of a pro-US essay). The authors suggest that when it comes to death anxiety, it is "precisely when people are unaware of this fear that it has the strongest impact on their behavior" (384). Of note, a recent meta-analysis of research on terror management theory found no differences in prime modality on numerous outcome variables; however, only 4% of the studies sampled (277 experiments) utilized the subliminal priming technique (Burke, Martens and Faucher 2010). Also of note, we utilized a delay (e.g., filler task) in both versions of the priming manipulation to preserve continuity across conditions. Although the TMT literature suggests that a delay is only needed after an explicit reminder of death to facilitate non-conscious defensive processes, we reasoned that the only concern with respect to the subliminal priming condition would be a potential fade out effect. We kept this possibility in mind when performing analyses, anticipating that we might focus in on the first caption attempt relative to all others.

2 Method

2.1 Participants

One-hundred twenty-three college students (79% female) at a small private university were recruited to participate in a study examining “Cognition and Humor” in return for course credit. When asked during debriefing, two participants indicated that they may have seen additional words onscreen during the subliminal priming task (without memory for the content of these words), and four participants indicated that they had eye or reading difficulties that caused them problems during the subliminal priming task; these six participants were excluded from the analyses reported below. Thus, 28 participants completed the subliminal death priming task, 26 completed the subliminal pain priming task, 32 completed the written death priming task, and 31 completed the written pain priming task.

2.2 Materials

There were four versions of the priming tasks, which varied according to modality and content. With respect to modality, two of them were subliminal priming tasks, and two were written priming tasks. For each modality, one task primed death whereas the other primed pain. As described below, each participant completed one of the priming tasks followed by the filler task and then the caption generation task. More detail is provided below.

2.2.1 Subliminal priming tasks

These tasks generally followed the procedures outlined by Arndt et al. (1997). Participants assigned to either of the subliminal priming tasks were seated in front of a computer and told that their first task would be a “word-relation” task. After the experimenter left the room, onscreen instructions indicated that for each trial of the word-relation task, “two words will be flashed in sequence, and you must decide whether or not you feel like the words are related to each other. We are interested in your ‘gut-level responses’ so please respond rapidly in categorizing each pair, but don’t respond so fast that you make many errors.” Participants were informed that they were to indicate whether or not they thought the words seemed to be related by pressing the ‘A’ key if the words seemed unrelated or the ‘L’ key if the words seemed related. Participants were then shown an example of

possible responses: “What if the word ‘FAJITA’ is flashed first and is followed by ‘SNEAKER’? In this case, you would press the ‘A’ key if these two words seem to you to be unrelated. However, you would press the ‘L’ key if these words seem to you to be related.”

Participants were then asked to complete five practice trials followed by a short break and then fifteen experimental trials. For each of the practice and experimental trials, two different words selected randomly from a list of stimuli were displayed one after the other in the center of the screen. Using Inquisit (2006) stimulus presentation software, the first word of each pair was displayed for approximately 430 ms, and the second word of each pair was displayed until the participant responded by pressing either the ‘A’ or ‘L’ key on the computer keyboard. The stimulus words were chosen from a list of words selected because they were unrelated to death or pain and were relatively neutral in affective tone. For example, the list of stimuli included CALCULATOR, ACCOUNTANT, LETTUCE, LIGHTSWITCH, and SHOELACE.

For each of the practice and experimental trials, subliminal primes were also displayed. Specifically, depending on whether a participant had been assigned the death or the pain subliminal priming task, either the word DEAD or PAIN was displayed onscreen for 33 ms immediately after the display of first stimulus word of each pair and was then replaced by the second stimulus word, which served as a post-stimulus mask.

After the final trial, onscreen instructions directed participants to open an envelope that contained the pencil-and-paper questionnaire that contained the filler task, the cartoon caption generation task, and a debriefing questionnaire and to begin working on these tasks.

2.2.2 Written priming tasks

Participants assigned to either of the written priming tasks were seated at a table and told that their first task would be to complete an “Attitudes toward Life Events” questionnaire, which assessed “people’s beliefs about what certain experiences feel like.” Depending on whether a participant had been assigned the death or the pain written priming task, each participant then responded to either of two pairs of writing prompts. These open-ended writing prompts used explicit priming to activate thoughts of death or dental pain and have been widely used in mortality salience research. Specifically, the death primes prompted participants to “Please briefly describe the thoughts and emotions that the thought of your own death arouses in you” and to “Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.”

The dental pain primes prompted participants to “Please briefly describe the emotions that the thought of dental pain arouses in you” and to “Jot down, as specifically as you can, what you think will happen to you as you physically experience dental pain.” Space was provided below each prompt for participants to indicate their responses.

When seating participants for the written priming task, the experimenter instructed them to continue to the next task immediately upon completing the second writing prompt. To ensure that participants in all four conditions completed the tasks in the same order, all participants received oral and written instructions to be sure to complete each item on a page before proceeding to the next page and, once they had proceeded to a subsequent page, not to turn back to a previous page.

2.2.3 Filler task

For all participants, the priming task was followed by a word search task labeled as a “Search Organization Task” which required participants to locate 14 “number” words (e.g., “eleven” or “twenty”) in a matrix of letters. This task required approximately five minutes to complete. Mortality salience researchers typically find that a brief delay between the priming task and completion of a study’s dependent measures accentuates the effects of the death prime (cf., Burke et al. 2010).

2.2.4 Caption generation task

The final task for all participants was described as a “Humor Generation Task.” This task presented each participant with four caption-less cartoon drawings drawn from a sample of *The New Yorker* magazine’s weekly Cartoon Caption Contest (devised and administered by *The New Yorker* cartoonist and cartoon editor Robert Mankoff). The four selected cartoons were taken from a sample of cartoons prescreened to eliminate overt images or themes of death, dentistry, and violence. In addition, the four selected cartoons were chosen because, as compared to the other prescreened cartoons, they were rated by a panel of four undergraduates as neutral in mood, moderately funny, and moderately difficult to caption. The four selected cartoons depicted, respectively, (a) a woman and man in a hotel room looking at an open suitcase full of water and swimming fish (Vey 2005); (b) a man, a woman, and a dog sitting in a living room and each appearing to be reading a book (Shanahan 2005); (c) a young girl playing violin for an older man in a disheveled room featuring scattered papers and a broken lamp (Diffie 2006); and

(d) a business executive and the contents of his office floating in the air, seemingly liberated from the constraints of gravity (Ziegler 2005). The instructions for the caption generation task directed participants to “write a humorous caption” and that their “goal should be to write down the funniest caption that comes to your mind” and that they should not turn the page until they have written a caption. Each participant completed the captions in one of four randomly assigned orders, with each cartoon appearing in a different ordinal position in each of the four orders. Cartoons were presented one per page, and below each cartoon was a blank in which to write a caption.

After generating the captions, participants were asked, separately for each cartoon, how easy it was for them to generate a caption for the cartoon and how successful they felt they were at generating a humorous caption for the cartoon. These self-ratings were made on nine-point scales (where, e.g., 1 = *extremely difficult* and 9 = *extremely easy*). The items corresponding to each cartoon were presented on a separate page, with the pages ordered to mirror the order in which the captions were generated and a copy of the relevant cartoon reprinted at the top of each page.

Although we allowed participants four attempts to generate captions, we also were mindful that the priming effects, if any, would most likely manifest in the first attempt. We were also mindful that any subsequent attempts at humor generation would necessarily be confounded with the first attempt (particularly if humor is acting as a defense against death reminders) and would thus render interpretation of the second through fourth captions difficult. That is, if the first attempt were most sensitive to the manipulation and hence also most relevant and successful in its defensive function, subsequent attempts would necessarily be diluted with respect to both prime impact and defensive functioning. Results reported below are therefore based only on the first caption attempt.

2.3 Procedure

Each participant completed the study tasks while alone in a small, sound-proof room. First, each participant completed one of four randomly-assigned versions of the priming task (subliminal death, subliminal pain, written death, or written pain). Following the priming task and the filler task, each participant completed the caption generation task. Most participants completed their assigned tasks in fewer than 15 minutes. After completing the caption generation task, participants were thanked and debriefed.

To generate ratings of the humorousness of the generated captions, six undergraduate psychology students were recruited to serve as raters. Adapting

Amabile's (1983) consensual assessment technique, each rater rated each participant's captions on a seven-point scale, where 1 = *extremely unfunny* and 7 = *extremely funny*. Following a brief training session in which each rater was instructed to rate the (randomized) captions according to his or her own sense of humor, each rater worked alone on rating all captions.

3 Results

3.1 Caption ratings

Interrater agreement was calculated for the six raters' ratings of the captions' humorousness and was acceptable, intraclass correlation (2, 6) = .65. For each caption, a mean humorousness rating was calculated by computing the mean of all six raters' ratings. The mean of the mean humorousness ratings was 3.13 ($SD = .82$), slightly below the midpoint of the seven-point rating scale. The mean ratings ranged from 1.50, for the caption with the lowest average humor rating, to 5.17, for the caption with the highest average humor rating. By way of illustration, an example of a caption rated as especially humorous for the cartoon of the fish in the suitcase was "When I said be sure not to forget the fish, I meant for you to feed them" ($M = 4.33$). For the same cartoon, a caption rated as relatively unfunny was "I guess my suitcase went for a swim" ($M = 2.50$).

To ensure that the selected cartoons did not differ in the extent to which they elicited humorous captions, we performed an analysis of variance (ANOVA) analyzing humor ratings as a function of which of the four cartoons were randomly captioned first by participants. No differences in funniness ratings emerged as a function of which of the four cartoons participants were captioning, $F(3, 112) = 1.67$, $p = .18$.

3.2 Priming effects on perceived humorousness

A 2×2 ANOVA examining the effects of prime content (death vs. pain) and prime modality (subliminal vs. written) on the captions' humorousness yielded no main effects for prime content or prime modality, $F(1, 112) = .02$, $p = .89$, and $F(1, 112) < .01$, $p > .99$, respectively.¹ However, there was a significant Content \times Modality

¹ As noted above, all reported analyses were only based on the first caption attempt. However, for all analyses implicating prime content or prime modality, when we examined each subsequent caption attempt separately (or all four in aggregate), no priming effects emerged.

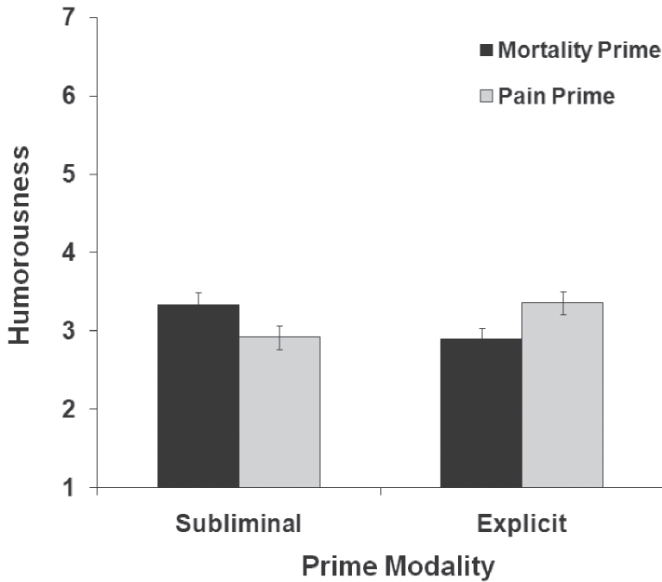


Fig. 1: Mean humorousness ratings as a function of prime content and prime modality. Standard errors are represented in the figure by the error bars attached to each column.

interaction for caption humorousness, $F(1, 112) = 8.90, p < .01$. As depicted in Figure 1, analysis of simple main effects clarified the nature of this interaction. Among participants who completed the subliminal priming tasks, the death prime ($M = 3.34$) yielded more humorous caption ratings than did the pain prime ($M = 2.92$), $F(1, 112) = 3.77, p = .05$. On the other hand, among participants who completed the written priming tasks, the pain prime ($M = 3.36$) yielded more humorous caption ratings than did the death prime ($M = 2.90$), $F(1, 112) = 5.25, p = .02$.

3.3 Priming effects on self-rated task performance

A 2×2 ANOVA examining the effects of prime content (death vs. pain) and prime modality (subliminal vs. written) on participants' ratings of how easy it was for them to generate a caption yielded no main effects for prime content or prime modality and no interaction, $F(1, 113) = .19, p = .66$; $F(1, 113) = .11, p = .74$; and $F(1, 113) = 2.65, p = .11$, respectively.

A 2×2 ANOVA on participants' ratings of how successful they were at generating funny captions yielded no main effect for prime content, $F(1, 113) = .02$,

$p = .89$. However, there was a main effect for prime modality, with participants who completed the subliminal priming tasks rating themselves as more successful ($M = 4.36$) than did participants who completed the writing priming tasks ($M = 3.36$), $F(1, 113) = 6.91, p = .01$. There was also a significant Content \times Modality interaction for self-rated success, $F(1, 113) = 5.65, p = .02$. Analysis of simple main effects clarified the nature of this interaction. For the subliminal priming tasks, those in the death prime condition ($M = 4.14$) and the pain prime condition ($M = 4.58$) did not differ in self-rated success, $F(1, 113) = .03, p = .86$. However, for the written priming tasks, those who were in the death prime condition ($M = 4.05$) rated themselves as more successful at generating a funny caption than did those in the pain prime condition ($M = 2.68$), $F(1, 113) = 5.25, p < .01$.

4 Discussion

The present study is the first to investigate the role that humor generation plays in the context of terror management theory. Moreover, it is the first to test how modality of prime (subliminal vs. explicit) interacts with a creative task. Results showed no main effects for prime or modality, but did show a significant interaction between the two. Specifically, those primed with subliminal reminders of death generated cartoon captions judged to be more humorous than those primed with subliminal reminders of pain. However, the reverse pattern was obtained for those primed with an explicit writing task; in this case, those who wrote about dental pain generated more humorous captions than those who wrote about their own death.

These findings suggest that creative humor production is inhibited by explicit mortality primes but facilitated by subliminal mortality primes. The latter findings are in step with research which suggests that subliminal or subtle reminders of death are most likely to increase death-accessibility and, accordingly, increase activation of symbolic, experiential terror management strategies (Arndt et al. 1997; Greenberg et al. 1994; Pyszczynski, Greenberg and Solomon 1999). Our study finds evidence of a type of “broaden-and-build” cognitively flexible response to subliminal death reminders (Fredrickson 1998). As noted earlier, however, only a small minority of terror management experiments make use of subliminal death reminders. More work is needed to clarify the conditions under which death reminders do in fact activate creativity vs. rigidity of mind and the associated positive outcomes (e.g., more open-mindedness for different political ideologies) that some work has already found occurs in response to creative exercises (Routledge and Arndt 2009).

It is somewhat surprising that explicit reminders of death inhibited humor generation, given research that finds such cues trigger automatic attunement to positive emotional information (De Wall and Baumeister 2007), or, under certain conditions (prosocial cues), creative problem solving (Routledge et al. 2008). This inhibition effect is also at odds with the literature documenting spontaneous use of humor in response to chronic and explicit death reminders (e.g., in times of war, Henman 2001; in the hospital emergency room, van Wormer and Boes 2009). It is possible that the explicit reminders of death activated a less positive initial response to the cartoon images (all of which were fairly surreal), which may have then inhibited creative humor production; this would fit with research showing that explicit death primes increase negative responses to modern art, presumably because such art is viewed as threateningly meaningless (Landeau et al. 2006).

Interestingly, whereas individuals who were subliminally primed with death or pain judged their captions to be more successful than those in the explicit prime conditions, individuals explicitly primed with death judged their cartoons to be significantly more successful than those explicitly primed with pain. There was thus a disconnect between subjective and objective ratings of success at the cartoon task; individuals in the explicit death prime condition were found to have generated significantly *less* humorous captions than those primed with pain. Findings might be partly explained by explicit death reminders activating a self-esteem bolstering defense relative to explicit pain reminders (e.g., Harmon-Jones et al. 1997). It is not clear why no significant difference between pain and death primes emerged in the subliminal conditions, however. More work is needed to clarify these distinctions.

It bears mentioning that while our divergent findings with respect to prime modality are somewhat anomalous within the limited studies of terror management in which subliminal processes are examined, divergence between implicit vs. explicit primes and/or assessments are the norm in other areas of research such as prejudice, in which dual process theories abound (e.g., research utilizing the implicit association test). To the extent that humor production is activated in response to unconscious defensive strategies, and to the extent that subliminally primed death anxiety may activate more authentically unconscious defense strategies (vs. those activated via mere distraction from an explicit death prime), we may be observing a particular synchrony between prime modality and defensive strategy. This finding speaks to the possibility that successful humor generation (vs. the perception of success) may be particularly sensitive to unconscious influences. More work is needed to continue probing these provocative distinctions.

Our study is not without limitations. While our single-item measures (e.g., self and cartoon ratings) provided the most parsimonious tests of our hypotheses and research questions, future research should continue to explore other

operational definitions of successful humor generation. Similarly, utilizing *The New Yorker* caption contest provided a convenient and ecologically valid outcome variable but it represented only one particular test of humor production. Future work should replicate across a number of different humor exercises. It is also not entirely clear from our study whether generating a caption implicitly primed the idea of amusing others, in addition to or instead of the self. Given that prosocial motivations for humor production increase creativity when explicitly primed in a lab setting (Routledge et al. 2008), future work should attempt to tease apart individual vs. collective goals.

Future research should also explore the distinction between humor generation and humor appreciation as they relate to TMT. Humor generation may be more specific to creative thinking than humor appreciation; the latter may actually be more linked to bolstering rigid cultural worldviews as a coping mechanism. For example, it is possible that mortality salience increases liking for humor that disparages outgroups. Interestingly, recent empirical evidence suggests that (explicitly) death-primed individuals appreciate death-themed humor more than punishment-themed humor and marginally more than control primed individuals (Hackney, 2011). However, the punishment-themed comic may not generalize to meaningful social outgroups, as it focused on the humiliation associated with being a telemarketer. This research on humor appreciation does raise the possibility that “grim reaper” style cartoons, for example, may serve a particularly death-defying function. More work is needed to determine whether enjoyment of death-relevant humor stimuli actually reduces death anxiety or merely reflects a tendency to appreciate prime congruent material.

Finally, although other research has found positive outcomes associated with creative thinking as well as the stress-mitigating effects of humor and amusement, our work was only designed to test the link between death reminders and successful humor generation. It will be important to clarify the efficacy of humor generation as a coping technique in the context of mortality salience experiences, as well as the conditions under which individuals’ capacity for humor generation under adverse circumstances (e.g., death reminders) may confer emotional, cognitive, and/or social benefits.

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