

BRIEF REPORT

When death thoughts lead to death fears: Mortality salience increases death anxiety for individuals who lack meaning in life

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Research derived from terror management theory demonstrates that subtle reminders of mortality increase strivings for meaning. It is argued that such strivings reflect efforts to prevent the anxiety that death reminders may otherwise cause. However, no research has directly tested the assertions that subtle mortality primes increase death anxiety and perceptions of meaning in life moderate this effect. The current study examined these predictions. Meaning in life was measured, death cognition primed, and death anxiety assessed. A mortality prime increased death anxiety, but only for individuals who lack perceptions of meaning in life. Theoretical and applied implications are discussed.

Keywords: Mortality salience; Death anxiety; Meaning; Well-being.

Humans are self-aware, abstract thinking, and temporally conscious organisms and thus possess the requisite cognitive capacities to fully contemplate their mortality. Since humans, like other animals, strive for self-preservation, the realisation that death is certain has the potential to cause great anxiety (Becker, 1973). Further, this awareness of eventual demise cannot simply be avoided because life is full of situations that render salient human fragility and transience (e.g., doctor appointments, terrorist threat warnings, news broadcasts). This poses the question: Do situational cues that heighten death awareness increase

death anxiety? Further, if so, why do people often seem relatively unaffected by reminders of mortality? Though life is full of experiences that make death salient, many people navigate these situations relatively free of distress. Therefore, if reminders of mortality can increase death anxiety, who is most susceptible to this effect, and who appears to be insulated from it?

According to terror management theory (TMT; Solomon, Greenberg, & Pyszczynski, 1991) conditions that remind people of mortality have the potential to increase death anxiety. However, the theory asserts that people can circumvent this

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anxiety by feeling like their lives are imbued with meaning and purpose. In other words, the inevitability of death is not as threatening if people believe that their existence, though transient, is meaningful and serves a greater purpose. In support of this assertion, a large body of experimental research indicates that when the awareness of death is heightened (mortality salience), people respond with efforts to reinforce a sense that human life is meaningful (see Pyszczynski, Solomon, & Greenberg, 2003). For example, different mortality-salience inductions (e.g., death writing task, presence of funeral home in visual field, subliminal death primes) have been shown to increase prejudice against those who subscribe to different meaning-providing cultural belief systems (Greenberg et al., 1990), belief in afterlife and divine intervention (Norenzayan & Hansen, 2006), denial of similarity to other animals (Goldenberg et al., 2001), and dislike of modern art that undermines perceptions of meaning (Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006). Though studies such as these indicate that mortality salience promotes efforts to perceive human life as meaningful, they do not provide evidence that these meaning-related defences serve to mitigate mortality salience induced death anxiety, or that reminders of mortality even increase death anxiety. Research by Greenberg and colleagues (2003) provided clearer evidence for these assertions by demonstrating that giving participants a placebo purported to prevent the experience of anxiety eliminates the typical effect of mortality salience leading to strivings for meaning. That is, when participants believed that they were inoculated from future anxiety they did not feel compelled to defend the cultural beliefs that provide a broader sense of meaning after death thoughts were primed. However, to date, no research has directly assessed whether or not mortality salience actually increases death anxiety or whether or not feelings of meaning mitigate this potential effect. The current study explored these questions.

Specifically, the current research tested the hypothesis that priming thoughts of death would heighten death anxiety for people who lacked

feelings of meaning in life but not for people who possessed such feelings. To test this hypothesis, in the current study, meaning in life was measured and mortality salience manipulated. Subsequently, death anxiety was assessed.

METHOD

Participants and procedure

Sixty introductory psychology students (33 females, 24 males, 3 unidentified) participated in a study called "Personality and Attitudes". They completed all materials in partitioned cubicles in the order described below. Upon completion of the study materials participants were fully debriefed.

Materials

Meaning in Life (MIL). The MIL measure (Ryff, 1989) consisted of the four items: "My personal existence is purposeful and meaningful"; "In life, I have clear goals and aims"; "I have clear goals and a satisfying purpose in life"; and "I regard my ability to find a meaning, purpose, and mission in life as being great" rated on a 5-point scale (1 = *disagree strongly*; 5 = *agree strongly*; $\alpha = .70$). These items were taken from the purpose in life subscale of a larger measure of different dimensions of psychological well-being. Ryff (1989) described the purpose in life subscale as reflecting the extent to which one sees one's life, past and present, as meaningful.

Experimental condition. Participants received either the mortality salience (MS) or control manipulation (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). Specifically, they responded to two open-ended statements: "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 control condition consisted of parallel statements regarding the experience of failing an important exam, so as to control for general elicitation of self-threatening negative

thoughts. As in previous research, the experimental induction was followed with a puzzle distraction task (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000).

Affect. The 20-item Positive and Negative Affect Scheme (PANAS; Watson, Clark, & Tellegen, 1988) consisted of 10 positive affect items (PA; $\alpha = .85$) and 10 negative affect items (NA; $\alpha = .88$).

Death Anxiety (DA). The DA measure (Lester, 1990) consisted of the 8-item death of self subscale from the Revised Collett–Lester Fear of Death Scale in which participants indicated how anxious they were about different aspects of death (e.g., “the shortness of life”, “the total isolation of death”) on a 5-point scale (1 = *not anxious*; 5 = *very anxious*; $\alpha = .87$). The full scale contains subscales relating to the process of dying and the death and process of others dying. In the current study, only the fear of death of self subscale was administered so as to measure specifically anxiety about personal mortality. The scale has been shown to be highly correlated with other measures of death anxiety and sensitive to

state changes in death anxiety (Mooney & O’Gorman, 2001).

RESULTS

There were no significant effects involving gender ($p > .25$). To test the predictions that mortality salience would increase death anxiety but only for those lacking meaning in life, regression equations were computed in which MS (dummy coded) and MIL (centred) were entered in the first step and the interaction in the second step. There were no significant main effects for MS ($B = 0.15$, $SE = 0.28$, $t = 1.07$, $p = .30$) or MIL ($B = -0.28$, $SE = 0.29$, $t = -1.53$, $p = .13$) in the first step. There was, however, a significant interaction in the second step, $B = -0.48$, $SE = 0.57$, $t = -1.99$, $p = .05$ (see Figure 1). Predicted means tests were conducted at low and high levels of MIL ($\pm 1 SD$) to further probe the nature of this interaction. At low levels of MIL, MS, relative to the control condition, was associated with increased DA, $B = 0.41$, $SE = 0.39$, $t = 2.18$, $p = .03$. There was no

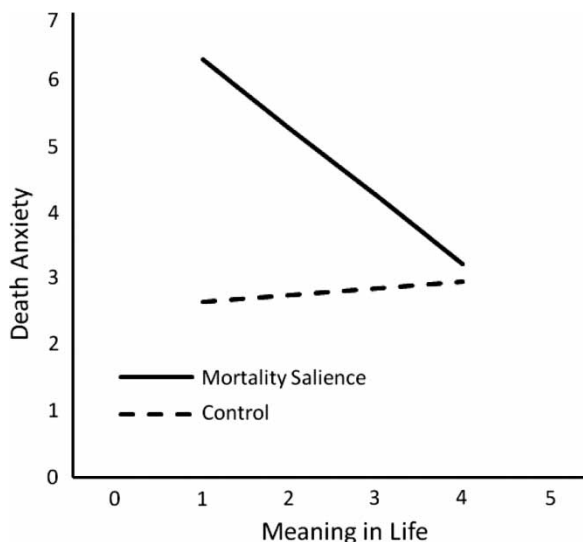


Figure 1. The effects of meaning in life and mortality salience on death anxiety. Note: Higher scores reflect higher levels of death anxiety and meaning in life.

significant effect of MS at high levels of MIL, $B = -0.13$, $SE = 0.40$, $t = -0.67$, $p = .51$. Furthermore, simple slope tests revealed that within the MS condition, higher MIL scores were associated with decreased DA, $B = -0.48$, $SE = 0.41$, $t = -2.53$, $p = .02$. No such relationship was found within the control condition, $B = 0.04$, $SE = 0.39$, $t = 0.24$, $p = .81$.

Potential effects of MS and MIL on positive and negative affect were also considered. As in previous research, MS had no significant effect on PA or NA ($ps > .80$). There was a main effect of MIL on PA such that higher MIL was associated with increased PA, $B = 0.27$, $SE = 0.20$, $t = 2.09$, $p = .04$. However, there was no significant interaction between MS and MIL ($p > .85$) on PA. There was also no significant main or interaction effects on NA ($ps > .22$) and controlling for NA and PA did not impact the previously reported significant interaction between MS and MIL, $B = -0.46$, $SE = 0.58$, $t = 2.04$, $p = .05$.

DISCUSSION

The current study provides the first direct evidence that subtle mortality primes lead to death anxiety for individuals not inoculated by existential meaning. People who indicated that their lives were full of meaning did not respond to mortality salience with increased death anxiety. Individuals lacking this existential resource did evidence increased death anxiety after thoughts of death were primed, and this effect was specific to death anxiety as generalised negative affect could not account for it. In addition, when death was salient, meaning was inversely related to death anxiety. These findings have important theoretical and applied implications.

The current study contributes critical empirical evidence to underlying assumptions of TMT. A number of hypotheses derived from TMT have received a great amount of empirical support. For example, research has shown that when meaning-providing structures (e.g., cultural worldviews) are undermined, the accessibility of death thoughts increases (e.g., Schimel, Hayes, Williams, &

Jahrig, 2007). When death thoughts are made accessible, people cling to and defend these meaning-providing structures (e.g., Rosenblatt et al., 1989). When feelings of broader purpose and meaning are bolstered prior to a mortality-salience induction, people do not respond to thoughts of death with further psychological defences (e.g., Dechesne et al., 2003). When mortality is salient, people dislike stimuli found to be meaningless (Landau et al., 2006) and will not use cultural icons to complete a problem-solving task if doing so denigrates the meaning of that icon (e.g., using a crucifix as a hammer; Greenberg, Simon, Porteus, Pyszczynski, & Solomon, 1995). All of these findings are consistent with the assertions that certain psychological and social structures imbue life with existential meaning and this sense of meaning shields people from the potential psychological consequences of mortality awareness. However, prior to the current research, a direct test of the effect of mortality salience on death anxiety had not been conducted. That is, though research has demonstrated that highly arousing conditions with death imagery lead to generalised anxiety (Greenberg et al., 1992), no studies had tested the assertion that subtle reminders of death, the types of primes that lead to increased meaning seeking, can lead to increased death anxiety, and particularly among those lacking the psychological protection afforded by perceptions of broader meaning. As previously noted, Greenberg and colleagues (2003) demonstrated that people will not engage the psychological defences that affirm a sense of meaning in response to mortality salience primes if they are led to believe that they are immune from the experience of anxiety. This finding strongly suggests that reminders of mortality can lead to death anxiety but does not directly test this assertion. The current research built upon Greenberg and colleagues' finding in two distinct ways in order to directly test basic tenets of TMT. First, the current study directly examined whether or not reminders of mortality increase death anxiety. Second, the current study directly assessed perceptions of meaning in life. Whereas previous research has relied heavily on the

examination of people's efforts to bolster and defend the psychological and social structures (e.g., cultural worldviews) that ultimately imbue life with meaning, the current research directly assessed to what extent individuals perceive life as meaningful. Thus, the findings of the current study complement the findings of Greenberg et al. (2003) and advance the broader research on terror management processes to indicate that perceptions of meaning in life protect people from the anxiety that contemplations of mortality may otherwise foster.

The current study also contributes to a wide range of research that indicates that meaning in life plays an important role in adaptive human functioning. Perceiving life as meaningful is a critical component of psychological health and well-being (King & Napa, 1998; Zika & Chamberlain, 1992). For example, a lack of meaning in life is a predictor of depression (Wong, 1998) and maladaptive health behaviour (Harlowe, Newcomb, & Bentler, 1986). Furthermore, feelings of purpose and meaning in life predict psychological well-being at almost every developmental stage from adolescence to late adulthood (Reker, Peacock, & Wong, 1987). Just as a sense of meaning in life has been shown to aid in coping with life stress (e.g., Mascaro & Rosen, 2006), the current research suggests that perceptions of meaning assist individuals in coping with the realisation that life is finite. Meaning in life helps ensure that death thoughts do not turn into death fears because to have a meaningful life is to be more than the sum of one's biological parts (Becker, 1973). That is, as many existential thinkers have noted (see Solomon et al., 1991), being part of something larger, more enduring, and of greater significance than one's physical existence provides feelings of death transcendence.

The current research has a number of limitations. For example, for the sake of brevity, the measure of meaning consisted of only four items. Though this measure has been demonstrated to be a reliable and valid assessment of meaning in life (see Ryff, 1989), future research should utilise additional measures of meaning. Also, in the current study, no baseline measure of death

anxiety was administered so as not to interfere with the experimental manipulation. Future research could, however, assess pre-existing levels of death anxiety some time prior to the experiment. However, since random assignment was used in the current research we are somewhat confident that baseline levels of death anxiety do not account for the observed significant differences between conditions.

The current findings also suggest a number of exciting future research directions. In the current study, meaning in life was measured, not manipulated. Just as life is full of situations that render death salient, life is full of experiences that both challenge and reinforce perceptions of meaning. Future studies should investigate the extent to which undermining and bolstering perceptions of meaning impact death anxiety when death is salient. In addition, if death primes increase death anxiety for those who lack sufficient meaning in life, situational cues that prime death may compromise psychological and physical health for those who do not perceive life as meaningful. Future research should consider the extent to which meaning in life also contributes to positive physical and psychological health outcomes when people are in situations in which they must confront their mortality (e.g., cancer screenings). For example, recently Goldenberg, Routledge, and Arndt (in press) found that conditions that reminded people of their similarity to other animals led women to perceive a cancer screening (mammogram) as more physically and psychologically uncomfortable. Did this threat to the belief that humans are more significant than other animals undermine perceptions of meaning, thus making the cancer-screening experience more threatening? Would bolstering perceptions of meaning increase the likelihood that individuals would adhere to recommended health screenings, screenings that are potentially anxiety-provoking because they remind people of their mortality? Future research should explore these questions as there could be many applied implications based on the basic assertion supported in the current research that when facing death-priming life

events meaning in life buffers individuals from death anxiety.

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