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Mortality salience increases death-anxiety for individuals low in personal need for structure

Clay Routledge · Jacob Juhl · Matthew Vess

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Abstract Research derived from terror management theory suggests that death cognition does not lead to death-anxiety because people respond to thoughts of death by turning to social and cultural structures that provide a sense of psychological security. However, recent research indicates that it is people high, but not low, in personal need for structure that turn to social and cultural structures in response to heightened death cognition. Such findings suggest that people low in PNS may be vulnerable to experiencing death-anxiety when death thoughts are activated. The current study explored this possibility. Individual differences in personal need for structure were measured and death cognition (mortality salience) was manipulated. Subsequently, death-anxiety was assessed. Mortality salience increased death-anxiety, but only among individuals low in personal need for structure.

Keywords Terror management · Personal need for structure · Mortality salience · Death-anxiety

Introduction

Although it may seem reasonable to expect death-focused ideation to be distressing, most people do not evidence any explicit signs of death-anxiety after thinking about their own mortality (see Greenberg et al. 2003). According to terror management theory (TMT; Greenberg et al. 1997), death-related cognition does not typically lead to death-related anxiety because people are able to protect themselves from this potential distress by investing in established social and cultural structures that provide them a meaningful and enduring sense of self. Consistent with this, a large body of research has demonstrated that priming death (mortality salience; MS) increases investment in and defense of established meaning and self-transcendence providing social and cultural structures (e.g., one's nation or religion, see Solomon et al. 2000). These findings suggest that when death thoughts are activated, most people are able to diffuse the threat of mortality before it can lead to deleterious affective consequences. However, the findings also imply that people who do not invest in established meaning providing social and cultural structures may be left vulnerable to death-related anxiety when thoughts of death are activated.

Indeed, recent research focused on individual differences in the personal need for structure offers clues about who may be most vulnerable. Personal need for structure (PNS; Neuberg and Newsom 1993) is a trait that reflects differences in the proclivity to seek out highly structured, clear, and certain perceptions of the world. For example, individuals high in PNS, relative to those low in PNS, are more likely to make spontaneous trait inferences (Moskowitz 1993), form stereotypes (Schaller et al. 1995), and employ stereotypes (Neuberg and Newsom 1993). Though this cognitive efficiency can lead to a number of socially problematic outcomes such as ingroup bias (Shah et al. 1998), a number of studies indicate that it can also help defend against mortality concerns. Specifically, recent research has discovered that people high, but not low, in PNS are especially likely to respond to MS with heightened defense of established social and cultural structures. For example, Juhl and Routledge

C. Routledge (✉) · J. Juhl
Department of Psychology, North Dakota State University, 115 Minard Hall, Fargo, ND 58108, USA
e-mail: Clay.Routledge@ndsu.edu

M. Vess
Ohio University, Athens, OH, USA

(2010) found that only high PNS individuals responded to MS with increased (1) negative evaluations of a person who insulted one's university, (2) positive evaluations of a person who bolstered one's religious tradition, and (3) self-reported willingness to use aggression as a means to defend one's religion. Similarly, Routledge et al. (2010) demonstrated that an ecologically valid mortality reminder (i.e., terrorism salience) led high PNS individuals to cling more strongly to cultural traditions. In short, people high in PNS appear to readily engage and defend the structures that are believed to insulate people from distress caused by death-related cognition. People low in PNS, in contrast, do not turn to such existentially protective structures and thus may be left vulnerable to heightened death-anxiety when confronting their own mortality.

Of course, demonstrating that people high in PNS are most apt to utilize existing social and cultural structures to counter MS does not directly demonstrate that these people successfully resolve the threat of death cognition, or that they do so to a greater extent than people low in PNS. In fact, another possibility is that people high in PNS are most likely to experience death-anxiety after MS and therefore must defend social and cultural structures to a greater extent than people low in PNS. Although this seems reasonable, a closer examination of additional research derived from TMT casts doubt on this possibility and further suggests that it is people low in PNS who may be most vulnerable to heightened death-anxiety following mortality reminders.

Specifically, Vess et al. (2009) found that MS decreased perceptions of meaning in life for people low in PNS but did not have this effect for people high in PNS. Vess et al. suggested that this pattern of results reflected high-PNS individuals' efficiency in activating psychological structures that confer meaning in the face of mortality concerns. Individuals low in PNS, in contrast, experienced deficits in perceptions of meaning presumably because these individuals do not readily turn to the structures that imbue the world with stable, predictable, and coherent meaning (see Landau et al. 2004). Such findings are thus consistent with the view that individuals high in PNS are most able to manage the threat of death awareness before it leads to affective consequences. However, the question of whether PNS predicts who will experience death-anxiety following reminders of mortality remains an open one. The current study was designed to directly bring data to bear on this issue.

In the current study, we examined the interactive effects of PNS and MS on death-anxiety. Specifically, we measured PNS, manipulated MS, and subsequently assessed death-anxiety. Based on past research showing that people low in PNS do not readily engage or defend existing social and cultural structures after MS, we hypothesized that MS would heighten death-anxiety among people low in PNS. People high in PNS were not expected to evidence heightened death-anxiety as a function of MS because they readily engage and defend existing social and cultural structures after MS.

Method

Participants and procedure

Fifty-four (26 males, 22 females, 6 unknown) Introductory Psychology students participated in exchange for course credit ($M_{age} = 19, SD_{age} = 4.62$). Participants were informed that the study concerned the relationship between various personality characteristics, were then given materials to complete in partitioned cubicles, and finally debriefed and thanked after the experimental session. Materials were presented in the order that follows.

Materials

PNS

Participants completed the PNS scale (Thompson et al. 2001) that assesses individual differences in preference for order, certainty, and coherent knowledge. Participants indicated their agreement with 12 statements (e.g., "I like having a clear and structured mode of life") on a 6-point scale (1 = *strongly disagree* and 6 = *strongly agree*). Responses on 4 items were reversed scored and averaged with the remaining items ($\alpha = 0.75$, $M = 3.53$, $SD = 0.61$) to create a composite PNS score. This scale has demonstrated adequate reliability and validity (Neuberg and Newsom 1993; Thompson et al., 2001).

Experimental condition

The MS condition (Rosenblatt et al. 1989) consisted of 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 as you physically die and once you are physically dead." Participants in the control condition received two parallel questions with respect to failing an important exam. As in previous research, participants completed a puzzle task after the MS induction which served as a delay task between the salience condition and dependent measure (see Arndt et al. 2004).

Death-anxiety

The death-anxiety measure consisted of the 8 item death of self subscale from the Revised Collett-Lester Fear of Death

Scale (Lester 1990). Participants indicated how anxious they currently feel about different aspects of death (e.g., "the shortness of life," "the total isolation of death") on a 5 point scale ($1 = not\ anxious$; $5 = very\ anxious$; $\alpha = 0.86$, $M = 3.22$, $SD = 1.02$). The complete scale contains subscales relating to the process of dying as well as the death of others and process of others dying. In the current study, only the fear of death of self subscale was administered because our hypotheses focused specifically on 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 and O'Gorman 2001).

Results

A regression analysis was conducted to test the effects of PNS and MS on death-anxiety. PNS (centered) and experimental condition (dummy coded) were entered in the first step and the interaction term in the second as predictors of death-anxiety. In the first step, there was a main effect for PNS such that higher levels of PNS were associated with lower levels of death-anxiety, $b = -0.51$, $SE = 0.23$, $t = -2.22$, $p = .03$. However, this effect was qualified by a significant interaction in the second step, $b = -1.16$, $SE = 0.51$, $t = -2.26$, $p = .03$ (see Fig. 1). To further explore this interaction, predicted means tests were conducted at one standard deviation below and above the mean of PNS. As predicted, at low levels of PNS, MS increased death-anxiety relative to the control condition, $b = 1.02$, $SE = 0.39$, $t = 2.61$, $p = .01$. There was no significant effect at high levels of PNS $b = -0.39$, $SE = 0.45$, $t = -0.89$, $p = .38$. Simple slope tests within each experimental condition were also conducted to further explore the nature of this interaction. Within the MS condition, low levels of PNS were associated with high levels of death anxiety, $b = -0.78$, $SE = 0.25$, $t = -3.13$, $p = .003$. There was no significant relationship within the control condition, $b = 0.38$, $SE = 0.45$, $t = 0.84$, $p = .40$.

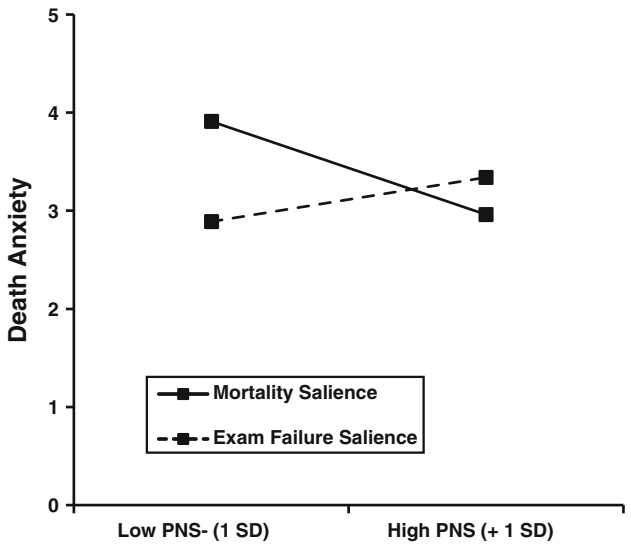

Fig. 1 The effects of PNS and MS on death-anxiety. *Note*: Higher scores on the y-axis reflect higher levels of death-anxiety

Discussion

MS increased death-anxiety, but only among those low in PNS. This finding has important implications for our understanding of how PNS influences people's efforts to manage death-related concerns. Specifically, the current study adds to a growing body of research demonstrating that individual differences in PNS play a decisive role in how people respond to MS and how MS affects indicators of psychological health and well-being (e.g., meaning in life, death-anxiety). In an early consideration of how PNS may affect responses to MS, Landau et al. (2004) demonstrated that for high PNS people, MS activates heightened efforts to see the world in highly structured, clear, and certain terms. In other words, MS exacerbates high PNS individuals' desire for structure. More recent research by Juhl and Routledge (2010) and Routledge et al. (2010) demonstrated that this increased structure-orientation is directed towards bolstering the symbolic self. In other words, it was only people high in PNS that defended meaning and self-transcendence providing social and cultural structures in response to MS. The current study complements past research by indicating that the people who engage in these defenses (e.g., ingroup bias, worldview defense) after MS are also the people that are most protected from MS-engendered death-anxiety.

People low in PNS, however, appear to be less protected, as they did experience death-anxiety after MS in the current research. What strategies are these individuals using to counter mortality concerns and why do they not appear to be successfully managing existential terror? Recent studies indicate that people low in PNS respond to MS with an increased desire to explore the social and cultural world (the opposite of how high PNS people respond to MS). For example, Vess et al. (2009) observed that for low, but not high, PNS individuals, MS increased scores on a measure of exploration (i.e., desire to learn about different theories and beliefs, experience new customs, and meet new people; Green and Campbell 2000). Similarly, Routledge et al. (2010) observed that American participants low, but not high, in PNS responded to a terrorism salience induction with increased openness to trying a non-traditional Thanksgiving Day meal. More recently, Routledge and Juhl (in press) also found that people low,

but not high, in PNS respond to MS with increased creativity. Though these responses to MS may be more prosocial, the current research raises the question of whether or not they adequately mitigate death-anxiety. The research by Vess et al. (2009) offers a potential answer to this question by showing that, although MS initially decreased perceptions of meaning among individuals low in PNS, meaning in life was restored after these individuals were given the opportunity to engage explorative thought processes. In other words, people low in PNS were able to successfully counter the ill effects of MS on perceptions of meaning if they were given an opportunity to follow through on the types of actions that MS triggers for them. When viewed alongside the current findings, this suggests that low PNS individuals may be vulnerable to increased anxiety and decreased well-being if they are not able to explicitly engage these explorative activities and processes. Individuals high in PNS, in contrast, utilize preexisting knowledge to ward off concerns about mortality and thus seem to be adequately equipped to prevent the threat of death from engendering harmful affective consequences.

The current research has at least two limitations that warrant discussion. First, it is important to acknowledge that the death-anxiety scale is a self-report measure. Thus, it is possible that after death was made salient, individuals high in PNS were merely less willing to truthfully report high levels of death fears than were individuals low in PNS. Though this alternative explanation cannot be ruled out with the present data, high PNS individuals did not express significantly less (or more) death-anxiety than individuals low in PNS in the control condition. This would seem to suggest that high PNS individuals are not generally less willing to report fears related to death. Future research should, however, seek out less direct ways to assess anxiety about personal mortality as most research exploring predictors and outcomes of death-anxiety has relied on self-report measures.

A second limitation of the present work is that PNS is an individual difference and thus it was measured, not manipulated. It is therefore possible that a correlate of PNS is responsible for the observed findings Again, this possibility cannot be ruled out with the present data; however, the present research builds upon a growing body of work highlighting that mortality salience-induced effects appear to be directly connected to the preference for clear and simple structure. Future research should nevertheless examine the potential association between PNS and other individual differences when further testing the role of PNS in terror management processes.

In conclusion, the current research indicates that PNS reflects an orientation to the world that has existential benefits. People who prefer to see the world in clear, orderly, and unambiguous ways may be more prone to dogmatism, fundamentalism, authoritarianism, and prejudice, but they are also more able to efficiently prevent death thoughts from turning into death fears. Though the current research focused solely on individual differences in PNS, the findings offer some insight as to why seeing the world in black and white as opposed to shades of grey may be so seductive in threatening times. A black and white world may be a more existentially soothing world.

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