

Memento Mori—A Study into the Proximal and Distal Defence Effects across Mortality Awareness

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Abstract

In support of Terror Management Theory, the dual-process defence model suggests proximal defence reduces the conscious impact of mortality salience by augmenting health optimism, whereas unconscious thoughts motivate distal defences that maintain cultural worldviews. However, mortality salience only allows for the consideration of death in the abstract, unlike ‘death reflection’ that allows for specified death thoughts. The dual-existential systems model suggests that death reflection will result in a growth-oriented state instead of defensive. This research aims to further distinguish mortality salience and death reflection by subjecting each manipulation to proximal and distal measures of defence. Specifically, it was assumed that death reflection will not lead to an increase in either health optimism or worldview defence. However, the main findings did not verify this prediction. Instead, death reflection under distal conditions leads to an increase in cultural worldview defence. Accordingly, it is concluded that a suppression and rebound effect was at play and that the death awareness manipulations are not as unique as first assumed. Nevertheless, additional research is required to confirm these inferences.

Keywords: death reflection, mortality awareness, mortality salience, Terror Management Theory

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Introduction

To think of human death as a purely biological event would be an oversight. Instead, it is a far more socially, culturally, and contextually bound process (Feifel, 1959). This is due to the uniquely

human ability of ‘death awareness’—the acknowledgement of our eventual mortality (Stein and Cropanzano, 2011). Although at a glance our understanding of mortality may seem detrimental, Viktor Frankl (1985) famously posits that meaningfulness can be obtained in the most miserable of states, and principally, death. This is due to our ability to recognise time as limited and thus serves as a motivation to obtain meaning in this finite life (Cozzolino and Blackie, 2013). The consequences of human death awareness have predominantly been studied through the lens of Terror Management Theory (TMT). TMT is a concept based largely on incitement from cultural anthropologist Ernest Becker (1962, 1973, 1975). Becker’s notable work, *The Denial of Death*, maintained that death is simply too terrorising to face. Therefore, efforts are made to protect oneself from the internal conflict that arises from the juxtaposition of knowing you will die and the instinct for survival (Becker, 1973). Greenberg *et al.* (1986) then formalised this initial analysis into the psychological concept of TMT. Accordingly, TMT explores the particular behaviours that result from our instinct for self-preservation that ultimately psychologically secure ourselves from human death awareness (Greenberg *et al.*, 1986).

TMT is built upon the premise that humans are principally cultural beings. For that reason, TMT states that self-preservation, in the face of death, is made possible through a dual-component cultural-anxiety buffer of cultural worldview defence and self-esteem (Greenberg *et al.*, 1990; Rosenblatt *et al.*, 1989). Accordingly, protection from death anxiety requires the attainment of self-worth, or self-esteem, within an individual’s given cultural context. These constructs aid the denial of death by embracing that which cannot die and therefore relieves death anxiety (Rosenblatt *et al.*, 1989). Specifically, some culturally valued aspect of the person will continue after their physical death, expressed through the maintenance of structures such as religion, social constructs, or by following normative rules. All of these provide a context in which an individual can feel culturally valued both physically and spiritually (Stein and Cropanzano, 2011). Becker (1973) termed this a human “immortality project”. The creation of such constructs allows for the denial of an otherwise animalistic, and meaningless life (Goldenberg *et al.*, 2001).

To experimentally observe the direct consequences of human death awareness, TMT research typically utilises a manipulation of mortality salience (MS). By making thoughts of death salient, it allows one to ponder death in an unspecified, abstract manner. Common methods of operationalising mortality salience include writing short essays about death, watching gory videos

or answering open-ended questions about death (Greenberg *et al.*, 1990; Kasser and Sheldon, 2000; Rosenblatt *et al.*, 1989). Even more discrete, subliminal stimuli, such as funeral homes, the elderly, or birthdays, can create a MS effect (Abel and Kruger, 2009; Maxfield *et al.*, 2007; Pyszczynski *et al.*, 1996). The mortality salience hypothesis states that since the cultural-anxiety buffer psychologically secures us against death awareness, reminding individuals of death will increase the demand for those protective structures (Harmon-Jones *et al.*, 1997). Specifically, when mortality is made salient, we see an increase in the fortification and maintenance of self-esteem and cultural worldviews, as discussed in detail later. Crucially, studies have consistently shown that these defensive behaviours are unique to the mortality salience manipulation by comparison with a variety of death-unrelated aversive topics, such as thoughts of dental pain, public speaking, paralysis, or exams (Greenberg *et al.*, 2000). Even in contrast to other forms of death awareness, MS is still distinctive in the behaviours it elicits (Cozzolino *et al.*, 2004). Although meta-analysis reveals that certain study criteria drastically improve the outcome of the MS manipulation, the effect has nonetheless been found across many contexts and variables (Burke *et al.*, 2010). From extensive previous TMT research, it maintains that mortality salience causes an internal conflict, and the dual-component cultural-anxiety buffer provides the protective structures to restore it.

Crucially, MS-induced behaviour will only take effect if such concepts are culturally prescribed. For that reason, cultural worldview defence forms the first element of the cultural-anxiety buffer. A worldview refers to the particular conceptions and philosophies of the world one possesses, and if upheld, provide a source of value (Greenberg *et al.*, 1990). In consequence, TMT states that after MS, an individual will strive to defend one's worldviews to uphold personal value and reduce death anxiety through a plethora of behaviour. Classically, experiments by Rosenblatt *et al.* (1989) demonstrate that individuals who are reminded of death will recommend harsher treatment of a moral transgressor; someone who has challenged their worldviews. A commonly observed effect is also an increase in greed or materialism, particularly in cultures that value the accumulation of wealth (Allen and Wilson, 2005; Kasser and Sheldon, 2000). MS also sees an increase in intergroup bias, reflecting an attempt to reaffirm the beliefs of the in-group members and distance themselves from the out-group, most commonly, investigated in terms of bias against religious or political ideologies (Greenberg *et al.*, 1990; Landau *et al.*, 2004). Moreover, MS can induce prosocial behaviour, such as altruism, but again only if such behaviour is culturally prescribed and forms part of the individuals' worldviews (Jonas *et al.*, 2002). Although certain research denotes that the MS

effect has not survived modernity and perhaps the necessary conditions no longer exist (Klein *et al.*, 2022), other recent research shows the persistence of the worldview defence response over time. For instance, concerning the recent COVID-19 pandemic, exposure to facemasks with a personally relevant cultural symbol, compared to a plain surgical mask, saw an increase in the positive perceptions of others after MS. The culturally symbolic features on the masks increased prosocial behaviour when one is reminded of death (Perach and Limbu, 2022).

The second element of the cultural-anxiety buffer is the creation and maintenance of self-esteem. Self-esteem is a social construct that is generally defined as the evaluative dimension of the self-concept (Hewitt, 2002). Greenberg *et al.* (1986) particularised that humans need self-esteem for healthy psychological functioning. Whereby, those low in self-esteem are implicated with a multiplicity of psychological complications, of which is predominantly anxiety (Rosenberg, 1962). In recent research, low self-esteem is still recognised as a risk factor for anxiety (Liu, 2022). Research also shows that adolescent anxiety disorders go on to be a predictor of low self-esteem in adulthood (Maldonado, 2013). Therefore, increased self-esteem can serve as an anxiety-buffer, and consequently self-esteem can aid in reducing death related anxiety. Classic evidence from Rosenblatt *et al.* (1989) showed subjects with increased self-esteem elicited less anxiety when exposed to MS, through gory video scenes, compared to neutral subjects. Additionally, Dechesne *et al.* (2003) found that by convincing participants of an afterlife, thus reducing death anxiety, self-esteem striving was eliminated. Therefore, TMT research, through MS, illustrates that death anxiety motivates individuals to invest in a cultural belief system and offers insight into why one may strive for value and meaning.

Although MS is widely accepted and utilised throughout TMT research, it is not without criticism. Cozzolino *et al.* (2004) present the main issue: mortality salience does not encapsulate the authentic reaction to actual traumatic death experiences. Through the study of near-death experiences (NDE) and posttraumatic growth (PTG), it became apparent that individuals who had physically faced death came to view seeking wealth and possessions as meaningless. This juxtaposed commonplace MS research that demonstrated increased materialism and greed after death awareness (e.g., Allen and Wilson, 2005; Kasser and Sheldon, 2000). Interestingly, NDE individuals reported how they integrated mortality more as a concept into their lives by facing death instead of denying it. This consequently led individuals to undergo a shift in values (Cozzolino *et al.*, 2004). Therefore,

PTG/NDE study greatly contrasts Becker's (1973) original presumption that death awareness is too terrorising for humans to face. The literature suggests this is the result of a different specificity associated with mortality. Whereby after a near-death experience, death becomes detailed and individuated, unlike MS, which instead explores death more generally. Therefore, Cozzolino *et al.* (2004) created the manipulation of "death reflection" (DR). This manipulation reflects specified, self-focused death thoughts in an experimental setting that greatly contrasts MS. The manipulation shares many features with PTG/NDE accounts and provides a chance to reflect on death with the opportunity to take others' perspectives.

The "dual-existential systems model" further demonstrates how individuals distinctly process their existence through one of two existential systems. Either, via a specific and personalized system or an abstract and categorical system, with each resulting in exclusive behavioural patterns. The systems are based on the specificity associated with each death awareness condition. Specifically, MS is processed through a more abstract system, resulting in a defence-oriented motivational state of worldview defence. This is because TMT research typically exposes participants to generic representations of death (e.g., gory videos), and thus lacks specificity to the individual. Contrasting to this, DR allows for the imaginability of the individual's own death, which increases specificity. In this manner, through DR, one can actively engaging with the idea of death, rather than deny it, negating the need to defend against death awareness. Therefore, DR is processed through the specific system that results in a growth-oriented state of progressive change (Cozzolino, 2006). Such change includes increasing positive body image perceptions, identity integration and pro-social behaviours (Alleva *et al.*, 2020; Blackie *et al.*, 2016; Blackie and Cozzolino, 2011). Although the present study will view MS and DR as independent and unique variables, there is evidence to suggest an interaction between them. Recent research demonstrates the co-existence of both death awareness types during situations of repeated exposure to death, for instance, throughout the recent COVID-19 pandemic (Zhong *et al.*, 2021). It is therefore by no means an understatement that the death awareness response is complex and thus the need for additional research to advance our understanding.

TMT has also seen expansion in other areas. The discussion so far implies a dual-component reaction to mortality salience that alleviates anxiety through self-esteem and cultural worldviews. However, research would suggest a temporal sequencing to the death awareness response, a particular

sequential order of defences against thoughts of death. Specifically, Greenberg *et al.* (1994) observed that after MS there is an initial suppression and then subsequently high accessibility of death-related thoughts. Indicating that thoughts of death are reduced immediately after MS as an initial form of defence. However, as time progresses, the thoughts become accessible again and a typical TMT defence response (e.g., worldview defence) is required as protection. Support from Arndt *et al.* (1997) saw that increasing cognitive load, thus disrupting any efforts to suppress death-thought, leads to an increase in thought accessibility and cultural worldview defence. Therefore, a delay or distraction manipulation was concluded as necessary after MS to thwart suppression and allow enough time to pass for death thoughts to become accessible again.

Consequently, a dual-process model of defence against conscious and unconscious (but still accessible) death thoughts was suggested (Pyszczynski *et al.*, 1999). With direct support for this proposition from Greenberg *et al.* (2000). Whereby, a delay/distraction task will shift thoughts of death from immediate awareness in the consciousness to the unconscious, with each state having a separate motivating influence on the MS response. The temporal sequencing of the dual-process model addresses operations at differing hierarchical levels. First, proximal defence in response to conscious thoughts of death activates direct defences to minimise the immediate threat of death. Secondly, distal defence in response to unconscious death thoughts involves the more abstract psychological goals of increasing cultural worldviews (Pyszczynski *et al.*, 1999). Importantly, research would suggest that the temporal sequence effect is unique only to MS. Greenberg *et al.* (1994) found no significant change in behaviour for participants exposed to 'deeper mortality treatments' that required further exploration into one's feelings about their mortality or that of a loved one.

In detail, conscious thoughts of death lead to proximal defences that enable death to be considered a problem for the future, mainly, individuals will bias their thinking to deny their conscious vulnerability to death. This is achieved either by addressing the biological and physicality of death or by removing the immediate thoughts of death. For example, individuals will avoid self-focusing behaviours (Arndt *et al.*, 1998), suppress death related thoughts (Arndt *et al.*, 1997; Greenberg *et al.*, 1994) or, perhaps most importantly, increase intentions to be healthier (Arndt *et al.*, 2003; Goldenberg and Arndt, 2008). In alignment, the Terror Management Health Model (TMHM) states that MS will induce health-oriented behaviours as the predominant proximal defence behaviour.

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This is due to the perception of better health and well-being as being able to forestall death and encourage longevity—addressing the direct biological, physicality of death (Goldenberg and Arndt, 2008). For instance, Arndt *et al.* (2003) demonstrate an increase in intentions to exercise immediately after thoughts about death. Moreover, according to TMHM, conscious death thoughts will also increase health optimism—individuals will bias thinking to be more optimistic about the outcomes of their health risk assessment immediately after MS. Thus, health optimism is a common measure of proximal death awareness defence (Aspinwall and Brunhart, 1996; Cooper *et al.*, 2010).

This contrasts with after a delay when death thoughts are in the unconscious and distal defence sees the bolstering of cultural worldviews. As aforementioned, one common expression of worldview defence is through the harsher treatment of a moral transgressor. This may be as trivial as serving someone you do not agree with more hot sauce to cause them discomfort (McGregor *et al.*, 1998). However, this effect extends to the identification with and defence of a whole nation. Thus, when mortality is made salient an individual may elicit more patriotic or nationalistic biases as distal defence. As evidence of this, MS has repeatedly been shown to intensify pro-American biases amongst American participants (Greenberg *et al.*, 1997; Nelson *et al.*, 1997). Importantly, this effect is intensified when such views are threatened. Upholding one's nation, and defending members of that nation, will embed the individual as a valuable member of that culture. In alignment with TMT, this provides an element of the self that will transcend death, alleviating death thought anxiety (Pyszczynski *et al.*, 1999). Although this effect has been strongly observed regarding American biases, the MS effect of increased favouritism towards one's nation has been since found in several European countries (e.g., Fritsche *et al.*, 2008; Giannakakis and Fritsche, 2011). Therefore, this research presumes that increased nationalistic sentiment after MS will translate to British biases, thus providing an operationalisation of distal defence. One notable example of British biases is expressed through positive evaluations of the monarchy.

Naturally, one may question whether other types of death awareness also arouse distinct sequential defences (proximal and distal) as seen in the dual-process model of defence. Along with the requirement for more research into the exact distinction between DR and MS, there is plenty of scope for expansion in this area. The present study aims to progress our understanding of the death awareness reaction by incorporating a test of proximal and distal defence against the Cozzolino *et al.* (2004) death reflection manipulation. By comparing death reflection to mortality salience in this

way, we hope to provide further evidence for the dual-existential systems model. In summary, previous research revealed that people under MS defend against conscious thoughts of death proximally, by denying the immediate problem of death by exaggerating their health optimism (Aspinwall and Brunhart, 1996). But, if this opportunity to defend is prevented by introducing a delay task, the unconscious thoughts of death will be distally defended by worldview defence (Greenberg *et al.*, 2000). An effect supposedly unique to MS. Combined with the knowledge that DR is processed through a completely separate existential system to MS that does not provoke a defence-oriented state (Cozzolino, 2006; Cozzolino *et al.*, 2004). It is therefore assumed that DR manipulations will not elicit the same sequential order of defence as MS neither proximally nor distally.

Therefore, the aim of this research is to test previously established constructs in TMT and further our understanding of the death awareness reaction by further distinguishing mortality salience and death reflection. On that account, there are four key assumptions. First, under proximal conditions, mortality salience will lead participants to have increased health optimism. Second, under distal conditions, mortality salience will lead participants to have increased worldview defence. Third, under proximal conditions, death reflection will not lead participants to have increased health optimism. And finally, under distal conditions, death reflection will not lead participants to have increased worldview defence.

Methodology

Participants

In total, 226 participants [77.9% female, 21.7% male and 0.4% non-binary. Aged 15-78 ($M = 32.60$, $SD = 16.20$)] comprised the sample. 78 were psychology UG students from the University of Essex, who received 0.5 module credits as compensation. The remaining 148 participants were a convenience sample who received no compensation. The majority of the sample were 'White British' (77.4%) followed by 'White Backgrounds' (8.8%) and 'African' (2.2%) with the remaining participants' ethnicity from other backgrounds (11.6%).

Design

A between-subjects 3x2 factorial design. The independent variables were death awareness (mortality salience vs. death reflection vs. control) and delay conditions (delay vs. no delay). Dependent variables were Proximal Defence (measured by the HSOM) and Distal Defence (measured by cultural worldview defence). Participants were allocated an experimental group via random assignment.

Materials

There were two filler pre-measures: A nationalism-patriotism measure (Federico *et al.*, 2005) and the Ten-Item Personality Inventory-(TIPI) (Gosling *et al.*, 2003). The purpose of which was to allow participants to get accustomed to the survey formatting and divert attention away from the main body of the experiment. Including filler items is in alignment with the practice of previous TMT research (e.g., Greenberg *et al.*, 2000).

MS was operationalised as seen in prior TMT research through “The Projective Life Attitudes Assessment” (Greenberg *et al.*, 1990; Rosenblatt *et al.*, 1989). Participants in this condition saw two open-ended prompts whereby they are asked to give a “gut-level” response - “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”.

DR was operationalised using the fire scenario and questions proposed by Cozzolino *et al.* (2004). Participants were instructed to read and imagine themselves as the subject of a house fire in which they imagined waking up in a friend’s apartment to “sounds of screams and the choking smell of smoke”. The account depicted the participant trying to escape, but “There is no way to leave the room”. It ends with the participant imagining that they have succumbed to the fire, resulting in their death. After reading the passage, participants were then instructed to answer the following questions as if the events occurred:

1. Please describe in detail the thoughts and emotions you felt while imagining the scenario.
2. If you did experience this event, how do you think you would handle the final moments?

3. Again, imagining it did happen to you, describe the life you led up to that point.
4. How do you feel your family would react if it did happen to you?

The control (CN) condition utilised a dental pain salience condition—a non-death-related but aversive topic typical of TMT research (e.g., Jonas *et al.*, 2002). Participants in the control condition were given 2 similar open-ended questions as the MS condition, but instead of death, the questions centred on a trip to the dentist. “Please briefly describe the emotions that the thought of going to the dentist arouses in you.” And “Jot down, as specifically as you can, what you think will happen to you physically at the dentist.” These questions were intended to evoke thoughts of an unpleasant experience but were unlikely to arouse specific thoughts of death.

The delay-distraction task comprised a short, mundane, excerpt from “The Growing Stone” taken from *Exile and the Kingdom* (Camus, 1957) and two simplistic closed questions on the passage. Several TMT studies have utilised this passage as a delay-distraction task to remove death related thoughts from immediate attenuation (e.g., Greenberg *et al.*, 1994). The passage is commonly utilised in TMT research as it does not refer to death or existential issues.

Proximal defence was measured by the Health Specific Optimism Measure (HSOM). A 20-item questionnaire based on Aspinwall and Brunhart (1996). The items assessed a range of positive beliefs on illness prevention, recovery, and general health. Items included "Positive thinking can improve recovery from an illness" and "I am healthier than most people I know" which are answered on a 7-point Likert scale from strongly disagree to strongly agree. The items were scored so that higher scores are indicative of higher health optimism and therefore higher proximal defence.

Distal defence was measured using an adaptation of Rosenblatt *et al.* (1989) so that it would better suit the anticipated sample. The original stimuli centred on a prostitution prosecution trial, whereby the participant was ultimately tasked to assign a bail amount to the defendant. For the present study, a pseudo-news article was created through the combination of real articles (see BBC News, 2022; ITV News, 2022), and was presented to the participant (see Appendix A). The article stimuli titled “Man heard heckling members of the Royal Family as they followed Queen Elizabeth’s Procession” and detailed an unpleasant event of an individual shouting anti-monarchist statements during Queen Elizabeth II’s funeral, and who was then arrested.

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Following the article were 12 questions on a 7-point Likert scale from “very untrue for me” to “very true for me” on views regarding the event. The questions comprised 2 main topics: pro-monarchy and pro-protest items. Sample items were: “I would have reported the heckler to the police” and “I feel it was wrong to heckle at Queen Elizabeth’s Funeral”. Such items were designed to assess the degree to which the participant’s worldviews were challenged.

Comparatively high pro-monarchy and low pro-protest scores were indicative of distal defence. Mirroring the Rosenblatt *et al.* (1989) task, the participant was then asked to assign a fine amount (£0-£200) to the defendant by manipulating a slider. The fine was given on the guidelines that “The amount of a fine must reflect the seriousness of the offence, with the statutory limit for a level 1 fine being £200”. Thus, higher fines were indicative of increased worldview defence and therefore distal defence.

To outline, proximal defence was measured through an increase in health optimism which was operationalised through the HSOM. Distal defence was measured through an increase in worldview defence which was operationalised through the pro-protest score, pro-monarchy score, and fine amount.

Procedure

The study materials were conducted online, via Qualtrics. Written consent was collected using computerised tick boxes stating confidentiality and anonymity. Post-study, a debrief outlining the true aims of the research is provided. Participants were instructed to allow 30 minutes to complete the study materials.

Firstly, the participants completed the two filler measures: The nationalism-patriotism measure and TIPI. Following this were the experimental conditions. Participants first saw one of three mortality awareness manipulations at random: MS, DR, or a Control. Then, participants were presented with either the “delay” or “no-delay” condition at random. Those in the delay condition first read and answered questions on the excerpt “The Growing Stone”, and then completed the HSOM. Counterbalancing the delay materials was utilised to negate order effects. Accordingly, participants in the “no-delay” condition completed the HSOM first and the excerpt second.

Next, all participants completed the distal stimuli materials. Reading the pseudo-news article, answer the following 12 questions and assigning a monetary fine. Lastly, a demographics questionnaire was completed, obtaining the participant’s age, gender, and ethnicity. A debriefing, outlining the true aims of the research was provided thus concluding the survey.

Results

Preliminary Analyses

Of the 375 participants who commenced the survey, 226 were completed—all incomplete samples were removed from the analysis.

The Health-Specific Optimism Measure consisted of 20 items, of which items 9, 12, 18, 20 were removed as filler items and 3, 5, 6, 10, 15 were recoded. The mean of the remaining 16 items became the HSOM score for each participant ($\alpha = .79$). Regarding the distal measures, the pro-monarchy components consisted of 7 items (4, 7, 8, 9, 10, 11, 12) of which 8 and 11 were recoded. The totalled mean creates a dependent variable representative of general positive feelings towards the monarchy for each participant ($\alpha = .91$). The 2 pro-protest components consisted of items 1 and 3, of which item 1 was recoded. The mean response for the two items created a dependent variable of positive feelings towards protesting in general for each participant [$t(224) = .63, p < .001$]. For the full distal scale see Appendix A. All measures were found to be highly reliable.

Primary Analyses

Table 1. Mean and standard deviations of the HSOM, pro-protest, pro-monarchy, and fine amount at each interaction.

		HSOM SCORE		PRO-PROTEST		PRO-MONARCHY		FINE AMOUNT (£)	
		M	SD	M	SD	M	SD	M	SD
MS	No Delay	4.13	.69	4.88	1.32	3.85	1.41	118.40	65.65
	Delay	4.06	.53	4.73	1.32	3.61	1.36	121.51	66.50
DR	No Delay	4.28	.78	4.88	1.51	3.29	1.35	108.58	59.18
	Delay								

	Delay	4.11	.68	4.32	1.39	4.17	1.45	143.82	53.51
CONTROL	No Delay	4.26	.66	4.97	1.35	3.68	1.38	96.27	70.63
	Delay	4.13	.69	4.68	1.23	3.46	1.46	111.58	70.17

A 3x2 ANOVA was conducted to examine the effect of the mortality condition (MS x DR x CN) and delay (delay x no-delay) on the mean health-specific optimism measure score. That analysis revealed no significant main effect of both the delay-no-delay [$F(1, 220) = 1.77, p = .184$] and mortality condition [$F(2,220) = .51, p = .599$] on HSOM. The interaction was also not significant [$F(2,220) = .107, p = .898$]. With the same independent variables, a 3x2 ANOVA was conducted to examine the effect on the mean pro-protest score. Similarly, the analysis revealed no significant main effects or interactions. All p values were greater than .05.

A 3x2 ANOVA on the effect of the mortality condition (MS x DR x CN) and delay (delay x no-delay) on the mean fine amount (£) revealed a main effect of delay-no-delay to be significant [$F(1, 220) = 4.13, p = .043$]. Specifically, the delay condition ($M = 125.64, SD = 5.99$) resulted in significantly higher average monetary fines compared to the no-delay condition ($M = 107.75, SD = 6.45$). The main effect of mortality condition was found to be not significant [$F(2,220) = 2.34, p = .099$]. The interaction between these terms was also not significant [$F(2,220) = 1.06, p = .349$].

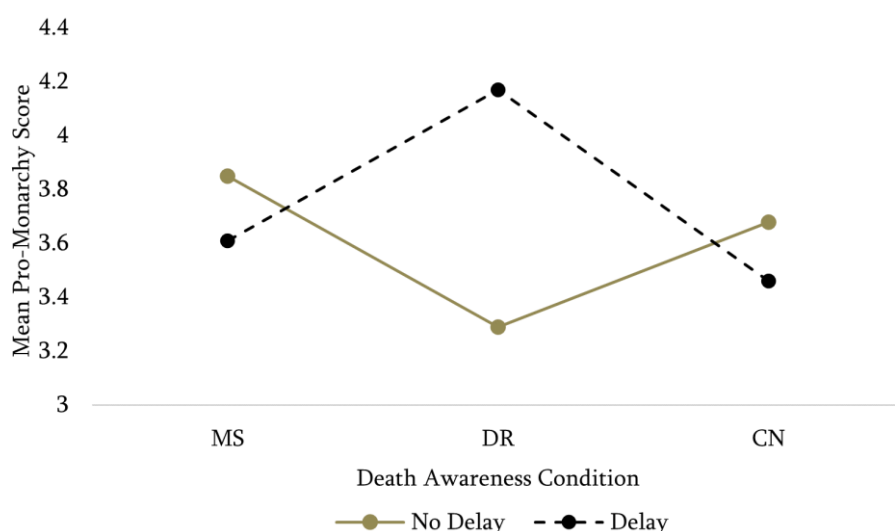


Figure 1. Interaction between mortality condition (MS x DR x CN) and delay (Delay x No Delay) on mean pro-monarchy score.

A final 3x2 ANOVA was conducted to examine the effect of the mortality condition (MS x DR x CN) and delay (delay x no-delay) on mean pro-monarchy score. The analysis revealed the main effect of delay-no-delay on pro-monarchy scores to not be significant [$F(1, 220) = .541, p = .463$]. The main effect of mortality condition (MS x DR x CN) was also not significant [$F(2,220) = .320, p = .726$]. Though, the interaction between these terms was significant [$F(2,220) = 3.47, p = .033$]. Simple main effect analysis of delay-no-delay in each mortality condition showed the mean pro-monarchy score to be significantly higher in the Delay x DR condition compared to No Delay x DR condition ($p = .014$) (see Figure 1). The simple main effect for delay-no-delay means were not significantly different for MS participants ($p = .473$) or for control participants ($p = .475$).

Discussion

Aside from testing established constructs, the present study aimed to further our understanding of the death awareness reaction and based on prior research, there were four main assumptions. The first assumption was that, under proximal conditions, Mortality Salience (MS) would lead participants to have increased health optimism. The second prediction was that, under distal conditions, MS would lead participants to have increased worldview defence. However, the results did not support either prediction. Worldview defence was operationalised through pro-protest scores, pro-monarchy scores, and fine amount, of which, none increased after MS and a delay manipulation. In addition, it was also unexpected to find a main effect that under distal conditions (delay) compared to proximal (no delay), there was a significant increase in fine amount (£). This was an unpredicted finding because the delay manipulation increased worldview defence, regardless of death reflection condition. According to Greenberg *et al.* (2000) increased worldview defence should only be observed after MS and a delay. Although significant, this main effect has no implications as it is without conjunction with a mortality awareness condition. It is possible this finding is a false positive. Accordingly, these collective results are inconsistent with findings by Cozzolino (2006) and do not support the dual-existential systems model since there was no evidence to suggest that MS resulted in a defence-oriented state. Furthermore, the results do not support previous research by Greenberg *et al.* (2000) and the dual-process model of defence as there was no evidence for a specific temporal sequencing of defence. There was no

distinction between behaviour under proximal and distal conditions when mortality was made salient.

The lack of support for the MS effect may be due to methodological concerns. One disadvantage of TMT research is evidence to suggest certain personality and contextual factors can diminish MS effects—too many to ever measure in one study. For example, old age (Taubman-Ben-Ari and Findler, 2005) or intrinsic religiosity (Jonas and Fischer, 2006) or gender (Arndt *et al.*, 2002). The role of dispositional self-esteem also cannot be understated as it makes up one of the two components of the cultural-anxiety buffer that aids in subsidising thoughts of existentialism, a component central to TMT (Rosenblatt *et al.*, 1989). Although numerous TMT studies have obtained significant MS effects when such variables are not controlled for, there are empirical inconsistencies. Perhaps the present study was influenced by such contextual factors that eliminated MS effects. In particular, gendered differences may have influenced the MS distal defence response. Although it was assumed that nationalistic principles would generalise across men and women and comprise a central cultural worldview, Arndt *et al.* (2002) found that MS only increased nationalistic construct accessibility in men. Accordingly, this may explain the lack of worldview defence after MS under distal conditions, since a predominantly female sample (77.9%) was utilised. For that reason, using a cultural measure of this manner may not have been the most appropriate. Therefore, future research should attenuate to the roles of personality. Mainly, the role of self-esteem and to ascertain that the distal defence measure is central to the participant pool's worldviews.

It is also true that the present study did not capture the traditional and “perfect” conditions for a significant MS finding. That is using: American participants, college students, a delay between MS and the dependent variable, and people-related attitudes as the dependent variable (Burke *et al.*, 2010). Although a delay and attitudes were measured, the present study comprised neither American nor only college students. Although TMT research has been successful without meeting these conditions, it may aid in explaining our absence of significant MS effects. Without further tests, it is impossible to determine which, if any, personality, or contextual factors may have influenced MS presently. Furthermore, a replication of classic TMT literature similarly concluded that perhaps the appropriate conditions for MS are not sufficiently understood or no longer exist (Klein *et al.*, 2022). Perhaps then, the current research substantiates this claim that the MS effect

is not understood enough and is too difficult to consistently achieve. Therefore, this study provides a challenge for TMT research. By raising issues regarding the replicability and definiteness of previous claims, models and theory should be revisited and adapted to suit the current climate.

The third and fourth predictions were that, under both proximal and distal conditions, Death Reflection (DR) would not lead participants to have increased health optimism or increased worldview defence. This was based upon the previous finding that via DR individuals will face death, rather than deny it, resulting in growth-oriented responses instead of defence-oriented (Cozzolino *et al.*, 2004). The results did, in part, support this prediction. Under both proximal and distal conditions, DR did not lead participants to have increased HSOM scores, pro-protest scores or fine amount (£). Which, according to these measures, indicated that participants did not sequentially defend against thoughts of death. Unexpectedly, however, under distal conditions, DR did ascertain a significant increase in pro-monarchy scores compared to proximal conditions. This signified that defence was elicited in this regard. Although the majority of DR conditions did not lead to defence-oriented or sequential responses as predicted, these results do not support Cozzolino (2006) and the dual-existential systems model. This is because DR and MS did not evoke significantly differing construals of death, the results indicated that both manipulations showed (in the majority) a lack of defence against thoughts of death.

Interesting, however, was the simple main effect of death reflection after no delay leading to an increase in pro-monarchy scores. As a measure of cultural worldview defence, an increase in pro-monarchy scores would instead have been expected after mortality salience under distal conditions. Additionally, it was originally specified that ‘deeper mortality treatments’ do not elicit distal defence (Greenberg *et al.*, 1994). Therefore, this finding was unanticipated. Perhaps then, as DR elicited an MS-typical response, this is in alignment with recent research that suggests the co-existence of both mortality awareness types, particularly during situations of repeated exposure to death stimuli (Zhong *et al.*, 2021). It is possible that the present study created a manipulation of repeated exposure by including stimuli that featured a funeral procession. And as past research would suggest, funerals do induce mortality salience (Pyszczynski *et al.*, 1996). Seemingly under distal conditions, after the initial suppression of death thoughts, the second exposure to death stimuli caused a rebound effect resulting in an increased worldview defence of the monarchy. We

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did not, however, find this exaggerated distal defence response to MS. This is in agreement with Trafimow and Hughes (2012) who found no evidence for a suppression and rebound effect under MS. Perhaps then, a rebound is more likely to occur under repeated exposure and other types of death awareness, namely death reflection. Additional research is required to confirm these inferences and care should be taken to avoid the aforementioned biases and issues regarding the study design.

The present findings reshape our current knowledge in the Terror Management Theory field by disrupting the scientific consensus. Instead of providing further evidence for the dual-process model of defence and dual-existential systems model, contradictory results were found. Firstly, there was no evidence to suggest a sequential order to the mortality salience defence response which does not support the dual-process model. Consequently, it appears the mortality salience response lacks the required understanding to be found consistently across all research. Secondly, although death reflection manipulations did not elicit a temporal sequence of defence, under distal conditions it led to increased cultural worldview defence. By eliciting a defence-oriented response, this finding contradicts the dual-existential systems model by suggesting that the mortality awareness responses are not as unique as originally thought. Although a single failure to provide evidence for these models does not overturn all prior research. The present findings, nevertheless, provide important insights and challenges for future Terror Management Theory research to address. Mainly, identifying a need for further investigation into the reliability of the mortality salience effect and the underlying processes of death reflection that may have resulted in the present observations.

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Appendix A: Distal defence stimuli



The image is a screenshot of a BBC News article. At the top, the BBC logo is on the left, and navigation links for Home, News, Sport, Weather, iPlayer, and Sounds are on the right. Below this is a red banner with the word "NEWS" in white. Underneath the banner, there are several category links: Home, Cost of Living, War in Ukraine, Coronavirus, Climate, UK, World, Business, Politics, Tech, Scotland, Scotland Politics, Scotland Business, Edinburgh, Fife & East, Glasgow & West, Highlands & Islands, NE, Alba, and Local News. The main headline of the article is "Man heard heckling members of the Royal Family as they followed Queen Elizabeth's Procession." Below the headline is the date "13 September" and a red share icon. The article features a photograph of a royal procession with a white hearse, soldiers in red uniforms with black bearskin hats, and a large crowd of people. Below the photo is a sub-headline: "A 22-year-old man may face 'breaching the peace' charges after heckling the Royal Family as they walked behind the Queen's procession." The main body of the article is a paragraph of text describing the event.

Man heard heckling members of the Royal Family as they followed Queen Elizabeth's Procession.

13 September



A 22-year-old man may face 'breaching the peace' charges after heckling the Royal Family as they walked behind the Queen's procession.

Thousands of Scottish mourners came out to pay their respects as The Queen left Balmoral for the last time. The procession was largely silent, sombre, and respectful with well-wishers gathered beside country roads, bridges and in village and city centres to say their goodbyes. However, this silence was broken. Footage showed a man shouting anti-Monarchy statements at the Royal Family as they followed the coffin up Edinburgh's Royal Mile on the 12th of September. This shouting was picked up by the BBC broadcast for the world to hear.