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The numbing effect of mortality salience in consumer settings

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Abstract

Nationwide Insurance and Johnnie Walker Scotch aired advertisements that encouraged people to contemplate death. What are the immediate emotional and perceptual outcomes of such advertisements? With five studies, thinking about death was found to attenuate emotional reactions and perceptions, a novel finding in the literature. This attenuation was observed with neural and self-report measures along with retrospective and prospective assessments of emotion and is an outcome not yet investigated in mortality salience research. Contemplating death dampened people's expectations of emotion in a future consumption experience and diminished the attractiveness of the experience. Similarly, contemplating death affected backward-looking assessments of emotion, for example, when nostalgic memories are brought to mind. Importantly, this dampening effect of mortality salience was replicated with advertisements that portrayed death-related concepts and attenuated emotional reactions to subsequent advertisements.

KEYWORDS

advertisements, anticipation, consumption experience, death, emotion, memory, mortality salience, numbing

1 | INTRODUCTION

Can thinking about death or exposure to death-related content numb—attenuate a person's ability to experience, recall, and anticipate emotion? Are there consequences of numbing in situations where consumers might reflect on or predict the value of a future consumption experience? Can an advertisement with a death appeal numb consumers to subsequent advertisements with emotion-evoking content? These theoretical and practical questions motivate the current research.

Numbing is a response that results from the emotional system temporarily shutting down (DeWall & Baumeister, 2006). With numbing, an insensitivity to emotional stimuli is exhibited. Numbed individuals report a lack of feeling and an inability to anticipate or look forward to positive events and experiences, along with an altered perception of time and thoughts of meaninglessness (DeWall & Baumeister, 2006). Put differently, numbed individuals tend to not feel good or bad, but simply muted or flat, and have difficulty imagining strong emotional reactions in future events. Numbing can result from social exclusion and is also a defining characteristic of posttraumatic

stress disorder (PTSD; Baumeister, DeWall, & Vohs, 2009; Ben-Ezra, Leshem, & Goodwin, 2015; Blake et al., 1995; Litz et al., 1997; Tull & Roemer, 2003; Twenge, Baumeister, Tice, & Stucke, 2001). Interestingly, the capacity of mortality salience, the state of being aware of dying and life's finitude, to temporarily numb has not been explored. Yet, mortality salience, like social exclusion, is a powerful meaning threat, and thus numbing is a conceivable response.

Demonstrating that numbing may occur in response to increased mortality salience is a major contribution of the present research. A second contribution comes from identifying that numbing can be detected with self-reported perceptions of emotion, for example, in situations that involve consumers reflecting on or recalling prior experiences. From three of the five studies in the present research, it is apparent that numbed individuals are less likely to remember a past event as emotional. This is a novel finding. Prior research has only identified that numbed individuals are less able to imagine strong emotions in future events (DeWall & Baumeister, 2006). Using a consumption situation, the present research makes an empirical contribution by replicating and extending this finding. Perhaps of

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greatest interest to marketing practitioners and also a novel contribution of the present research, the effect of numbing on consumer evaluations and emotional reactions to advertisements is identified. The effect and relevance of numbing in consumption contexts have not been explored in prior research. By using traditional and market-relevant manipulations of mortality salience, theoretical and practical contributions are made.

2 | THEORETICAL DEVELOPMENT

2.1 | Mortality salience and numbing

Mortality salience can be triggered in a myriad of conscious and nonconscious ways, and people regularly have experiences capable of triggering an awareness of life's finitude (Arndt et al., 2004; Sarial-Abi, Vohs, Hamilton, & Ulqinaku, 2016). Because this awareness has the potential to become emotionally heavy and overwhelming, coping responses have evolved (Arndt et al., 2004; Arndt, Greenberg, Solomon, & Simon, 1997). When death-related thoughts are triggered, attempts to push these thoughts out of one's mind quickly follow (Arndt, Cook, Goldenberg, & Cox, 2007; Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000). This immediate, proximal response is similar to the suppression of trauma-related thoughts, which occurs when individuals encounter a stimulus that triggers memories of a traumatic event (Blake et al., 1995; Catarino, Kupper, Werner-Seidler, Dalgleish, & Anderson, 2015). However, with PTSD, suppression of trauma-related thoughts is also accompanied by numbing (Ben-Ezra et al., 2015; Blake et al., 1995; Litz et al., 1997; Tull & Roemer, 2003). Individuals experience a lack of feeling and are less able to anticipate the pleasure of future events. Indeed, this numbing parallels people's responses to situationally induced social exclusion. Empirical findings in the social exclusion and PTSD literatures indicate that the emotional system shutdowns to cope, leading to numbed responses.

Because social exclusion and mortality salience are both significant meaning threats and because the mechanics of responding and coping with mortality and trauma reminders are similar, it seems reasonable to explore and expect that making mortality salient could temporarily numb. Consistent with prior research, it is expected that numbing will be observable in how individuals respond to emotional stimuli, as when viewing emotion-evoking movies or advertisements or when considering the emotional aspects of a future consumption experience, as when contemplating a night out at the movies. Unique to the present research, it is expected that numbing will also be observed when individuals reflect on the emotional experience of a past event. In summary, numbing should be observable across a variety of situations that involve experiencing, recalling, and anticipating the emotional aspects of consumption-related experiences. Thus, it is predicted that,

H1: When mortality salience is high (low), more (less) numbing will be observed.

Identifying similarities in how people cope with and respond to increased mortality salience, social exclusion, and posttraumatic

stress is not meant to imply that viewing an advertisement with death-related content, for example, is the same as experiencing and responding to social rejection or posttraumatic stress. Rather, the point is to highlight that similarities in the mechanics of coping make it reasonable to infer that numbing may occur when mortality is salient, even if temporarily. Next, the value of examining emotion-related perceptions in consumption experiences as a practical means to test hypothesis 1 (H1) is discussed. The expected effect of numbing on consumer evaluations is also developed in the proceeding discussion.

2.2 | Emotion, emotion-related perceptions, and consumption experiences

Anticipating the emotional and multisensory qualities of a consumption experience, such as an evening at the movies or attending a concert, is pleasurable as is recollecting and reliving the emotional details of a past experience (Ebert, Gilbert, & Wilson, 2009; Van Boven & Ashworth, 2007). The anticipated emotionality is an important signal of value when in the market for an experience (Goode, Hart, & Thomson, 2016; Mellers, Schwarz, & Ritov, 1999; Patrick, MaInnis, & Park, 2007). After consumption, the value of an experience endures for as long as it remains emotionally significant and memorable (Roehm, 2016). Testing the central hypothesis—increased mortality salience numbs—should be straightforward and ecologically valid if people are put in situations where they might normally experience, attempt to simulate, and/or think about emotions as when reflecting on and anticipating a consumption experience and viewing advertisements. Thus, the present research uses lab-administered consumption situations, personal memories, and advertisements to test H1 and to explore the downstream effects of mortality salience-induced numbing on consumer evaluations.

If mortality salience numbs, such that emotion perceptions are suppressed when reflecting on or anticipating a future consumption experience, then it seems reasonable to expect that evaluations of the experience will be affected. Recall that the value of hedonic consumption experiences resides in their capacity to make you feel something (Goode et al., 2016; Roehm, 2016). In part, people consume experiences, like a night at the movies or a rafting trip, for the emotions they confer. Thus, if perceptions related to the emotional qualities of experience are attenuated, so too should evaluations of the experience. Stated formally in a mediation hypothesis, it is predicted that,

H2: When mortality salience is high (low), more (less) numbing will result and, in turn, evaluations of experience will be lower (higher).

2.3 | Overview

Five studies were designed to test the hypotheses. The numbing effect of mortality salience was examined across a variety of

situations involving lab-administered consumption experiences (Studies 1, 3, and 4), revisiting a nostalgic memory (Study 2), and viewing in-market advertisements (Study 5). All studies directly tested H1 using neural measures of emotion increasingly popular in the advertising industry (Studies 1 and 5) or self-reported perceptions of emotion used in prior academic research (Studies 2, 3, and 4). Studies 3 and 4 tested the mediation H2.

3 | STUDY 1: NEURAL EXPLORATION OF NUMBING

This study was designed to test H1. Specifically, a restriction of *experienced* emotion (i.e., numbing) was expected to occur after making mortality salient. To increase mortality salience, participants were prompted to contemplate death using a manipulation widely used in the literature. Electroencephalogram (EEG) was used to unobtrusively measure emotion. As it is possible that contemplating death could be accompanied by changes in attention, attention was also measured.

3.1 | Method

Participants ($n = 97$, 23% female, $M_{\text{age}} = 27.74$; $SD_{\text{age}} = 4.12$) were recruited to a research lab through a panel maintained by a market research company and remunerated \$50. After consenting, participants were fitted with an EEG headset, NeuroSky's Mindset Brain-Computer Interface System. The headset is noninvasive, wireless, and uses four dry electrodes behind the ears and on the forehead to measure neural activity (Crowley, Sliney, Pitt, & Murphy, 2010). Data were sent from the headset to the computer via Bluetooth. Gamma (30–40 Hz) and β (13–30 Hz) bands were the brainwaves focal to the study. γ -band activity (GBA) is associated with emotional response (Khushaba et al., 2013; Li & Lu, 2009; Luo et al., 2009), and β -band activity (BBA) is associated with attention (Rebolledo-Mendez, Freitas, Rojano-Caceres, & Garcia-Gaona, 2010).

Participants were randomly assigned to one of two conditions and prompted to think about their own death (high mortality salience) or experiencing dental pain (low mortality salience). Both conditions involve contemplating aversive events with the intent to ensure differences in affective responses during the manipulation are minimal (e.g., DeWall & Baumeister, 2007; Mandel & Heine, 1999; Salisbury & Nenkov, 2016; Skowronski, Sedikides, Xie, & Zhou, 2015). Thus, if a difference emerges on a dependent variable, this difference can be attributed to the uniquely hypothesized effect of mortality salience.

The first prompt of the manipulation encouraged participants to, "please think about and describe what will happen to you as you physically die (experience dental pain)." With the second prompt, participants were instructed to "think and write about the emotions that the thought of your own death (experiencing dental pain) arouses in you." A posttest of the mortality salience manipulation used in Studies 1 through 4 is in Appendix A. Again,

this manipulation is empirically validated and widely used in marketing and psychology literatures (e.g., DeWall & Baumeister, 2007; Quirin et al., 2012; Routledge, Arndt, Sedikides, & Wildschut, 2008; Sarial-Abi et al., 2016; Schimel, Simon, Greenberg, Pyszczynski, & Solomon, 1999).

Next, participants watched a short movie about an outdoor skating adventure. The movie was pretested ($n = 44$) and was engaging ($M = 5.66/7$) and memorable ($M = 5.98/7$). Participants were then instructed to, "Think back on the video you watched and imagine the event is something you experienced." In prior research, tasks related to reflecting on and savoring hedonic events often result in the elicitation of emotion (Bryant, Smart, & King, 2005; Ebert et al., 2009). Thus, it was expected that numbed participants in the high mortality salience condition would be less likely to respond emotionally at this stage in the study in comparison with the low mortality salience condition.

GBA and BBA measurements were filtered, as in Szafir and Mutlu (2012), to remove artifacts and noise arising from muscle movement in the scalp and face. The system sampled at a rate of 512 Hz. Mean GBA and BBA rates were calculated to allow comparisons among emotional response and attention during the first and second prompts of the manipulation and while watching the movie and reflecting on the experience in the movie. Additional details regarding the EEG methodology and measurement are available upon request. Calculating and comparing means among each task in the study was done to better understand how participants respond during and directly following the mortality salience manipulation, a perspective not currently available in the literature. Participants shared their age and gender and responded to hypothesis probes in all studies. Participants were not aware of the hypotheses in any of the studies.

3.2 | Results

3.2.1 | Emotional response

A mixed analysis of variance (ANOVA) was conducted with mortality salience as the between-subjects factor and time (the four points when brain activity was sampled) as the within-subjects factor. GBA was the dependent measure. The main effect of mortality salience was not significant, $F(1, 95) = 1.05$, $p > 0.29$. The main effect of time was significant, $F(3, 285) = 54.77$, $p < 0.001$. GBA significantly increased between the first and second prompts of the manipulation, $t(96) = 2.26$, $p = 0.03$, and then significantly decreased between the second prompt and the movie, $t(96) = 8.80$, $p < 0.001$ (see Figure 1). This increase in GBA between the manipulation prompts corresponded with participants shifting from describing the experience of physically dying or dental pain (first prompt) to thinking and writing explicitly about the emotions that death or dental pain arouses (second prompt). The results suggest that participants were emotionally engaged with the manipulation. Importantly, the interaction between mortality salience and time was significant, $F(3, 285) = 3.03$, $p = 0.03$, indicating that emotional response differed between the high versus low mortality salience conditions. Specifically, GBA was significantly lower in the high

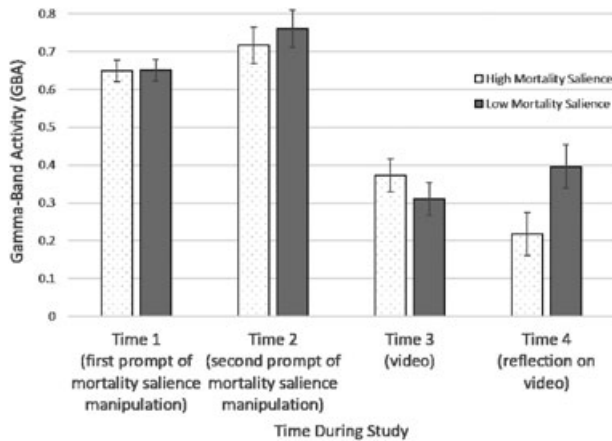


FIGURE 1 Study 1 means and standard errors for emotional response measured by γ -band activity

versus low mortality salience condition when participants reflected on the experience, $t(95) = 2.23, p = 0.03, d = 0.45$. There were no significant differences in GBA between high and low mortality salience conditions while participants completed the manipulation or watched the movie (all $t < 1.04$, all $p > 0.29$).

3.2.2 | Attention

A second mixed ANOVA with BBA as the dependent measure was conducted. The main effect of time was significant, $F(3, 285) = 43.76, p < 0.01$. BBA was greatest during the second prompt of the mortality salience manipulation in comparison to BBA at all other times (all $t > 4.44$, all $p < 0.001$). In other words, participants paid the most attention during the study when contemplating emotions associated with dying or dental pain. BBA did not significantly differ during the movie or while reflecting on the movie experience, $t(96) = 0.92, p = 0.36$. The main effect of mortality salience and the interaction between mortality salience and time were not significant (both $F > 2.00$, both $p > 0.15$). The results suggest that a difference in attention may not accompany the restricted emotional response that occurs when thinking about death versus dental pain.

3.3 | Discussion

Findings from this study offer insight into how emotion is impacted and changes over time in response to high versus low mortality salience. The present research is the first to offer this perspective in the mortality salience literature. Emotional response was highest when participants were encouraged to explicitly think and write about the emotions associated with two aversive events, dying or dental pain. Perhaps, not surprisingly, emotional response dropped in both conditions while participants watched the short adventure movie. This drop could reflect the onset of numbing in both conditions or that the movie was not as emotion eliciting as the manipulation. At this stage of the study, it is difficult to disentangle these two explanations. Importantly, when participants were

instructed to reflect on the movie experience later in the study, and to imagine the skating adventure was something they had experienced, a significant difference between the high and low mortality salience conditions emerged. Taken together, the pattern of results across time and the significant difference between conditions when participants reflected on the movie experience is consistent with greater numbing in response to high (vs. low) mortality salience and supports H1.

Compared with all other points in the study, attention was greatest while completing the second prompt of the mortality salience manipulation. Interestingly, attention did not differ between the mortality salience conditions, which suggests that attention may not alternatively explain the hypothesized effects. The role of attention is investigated again in Study 5.

4 | STUDY 2: MEASURING NUMBING WITH SELF-REPORTED PERCEPTIONS OF EMOTION

In addition to demonstrating that numbing may occur in response to increased mortality salience, an important goal of this paper was to determine if numbed individuals would recall a past experience as less emotional. In other words, can numbing be detected in situations where participants reflect on the emotionality of a past experience? Prior research has identified that numbed individuals, who have been socially excluded, for example, are unable to imagine having strong emotions in hypothetical future events. Whether numbed individuals would recall having strong emotions in a past experience has not been theorized or empirically tested. Results from Study 1 suggest that mortality salience can hamper people's capacity to respond emotionally when reflecting back on an adventurous experience. Similarly, with Study 2, it was expected that if participants were encouraged to identify and reflect on past, personally meaningful experience, they may recall the experience to be less emotional when mortality salience is high versus low. In Study 1, the movie experience was the same for all participants. In Study 2, this control was relaxed, and participants were encouraged to reflect on a nostalgic memory of their choosing. Participants were encouraged to access a nostalgic memory, because these types of memories often involve positive, momentous, and emotion-laden experiences (Routledge et al., 2008). In short, Study 2 was designed to further test H1.

4.1 | Methodology

A two (mortality salience: high or low) between-subjects design was used. Recruited at a large university for course credit, participants ($n = 57$; 51% female, $M_{age} = 18.02$; $SD_{age} = 0.67$) were told the study was investigating personality characteristics and attitudes and would involve sharing preferences for consumption experiences. After consenting, participants were randomly assigned to one of two mortality salience conditions. To support the cover story, participants completed personality scales. The mortality salience manipulation

was administered as in Study 1. Consistent with the methodology in prior research, the affect was measured using the positive and negative affect schedule (PANAS) (Arndt, Greenberg, & Cook, 2002; Das, Duiven, Arendsen, & Vermeulen, 2014; McCabe, Carpenter, & Arndt, 2015; Watson, Clark, & Tellegen, 1988). Participants completed the 20-item positive ($\alpha = 0.89$) and negative ($\alpha = 0.87$) affect the scale. Participants were then directed to bring to mind a memory of a nostalgic event in their life and to, “take the next few moments to write about and share the details of this event” (Routledge et al., 2008).

Recollected emotion was assessed with two items: “Do you recall the experience you just wrote about to be very emotional?” (1 = *not emotional at all*, 7 = *extremely emotional*) and “Was the experience you just wrote about very intense at the time it occurred?” (1 = *not intense at all*, 7 = *extremely intense*; $\alpha = 0.87$; adapted from Roehm, 2016).

4.2 | Results and discussion

Negative, $M_{\text{high}} = 1.94$, $SD = 0.71$; $M_{\text{low}} = 1.94$, $SD = 0.77$; $t(55) = 0.03$, $p > 0.25$, and positive affect, $M_{\text{high}} = 2.51$, $SD = .87$; $M_{\text{low}} = 2.90$, $SD = 0.72$; $t(55) = 1.82$, $p = 0.07$, did not differ between conditions, which parallels results in Study 1 where emotional response did not differ while participants watched the movie, a task that directly followed the mortality salience manipulation. As expected, the remembered experience was recollected as less emotional when mortality salience was high ($M = 3.73$; $SD = 1.69$) versus low ($M = 5.19$; $SD = 1.42$); $t(55) = 3.49$, $p = 0.001$, $d = 0.94$.

It is also worth pointing out that the types of memories recollected appeared to be qualitatively equivalent between the conditions. Two research assistants blind to the experimental conditions rated the meaningfulness of the experiences shared by participants. The research assistants were instructed, “Please indicate how personally meaningful this memory seems for the individual who shared the description” (1 = *not meaningful at all*, 7 = *extremely meaningful*; $r = 0.70$). Memories in the high mortality salience condition ($M = 4.74$; $SD = 1.41$) were not rated as more personally meaningful than memories in the low mortality salience condition ($M = 5.00$; $SD = 1.41$); $t(52) = 0.76$, $p < 0.45$.

These results, along with findings from Study 1, provide support for H1 and suggest that making mortality salient can numb and that this numbing is detectable in a situation that has people reflect on an experience that normally would be perceived as emotional. Again, this is a novel finding in the literature.

5 | STUDY 3: DOWNSTREAM EFFECTS OF NUMBING

Study 3 was designed to test H1 and H2. Like Study 1, a lab-based movie experience was administered, and participants reflected back on the emotionality of this experience. New to this study, the downstream consequences of numbing were investigated by having participants evaluate the attractiveness of the movie experience. This

study makes a novel contribution to research investigating numbing by identifying the downstream effect of numbing on consumer evaluations.

5.1 | Methodology

The recruitment approach and cover story from Study 2 was used. Participants ($n = 104$; 47% female, $M_{\text{age}} = 19.87$; $SD_{\text{age}} = 2.35$) watched a short movie about a skydiving adventure. A pretest ($n = 45$) showed the movie was engaging ($M = 6.06/7$) and memorable ($M = 6.62/7$). The mortality salience manipulation and then the PANAS were administered. To detect numbing, participants were asked to recall the emotion they experienced while watching the movie (“I felt a lot of emotion while watching the video,” “It was intense watching the experience in the video,” $\alpha = 0.83$). To assess the downstream effects of numbing, participants indicated their agreement with three statements: “I wish I had the experience in the video that I watched at the beginning of the study,” “If I had the opportunity to experience the event I watched, I would take it,” and “If I had experienced this, it would mean a lot to me,” where 1 = *strongly disagree*, 7 = *strongly agree* ($\alpha = 0.88$).

5.2 | Results and discussion

Like Study 2, there was no significant effect of mortality salience on negative, $\alpha = 0.91$; $t(102) = 0.49$, $p > 0.62$, or positive, $\alpha = 0.89$; $t(102) = 0.41$, $p > 0.68$, affect. Consistent with numbing, participants recalled the movie experience to be less emotional when mortality salience was high ($M = 4.40$; $SD = 1.40$) versus low ($M = 5.06$; $SD = 1.35$); $t(102) = 2.46$, $p = 0.015$, $d = 0.48$. Similarly, the movie experience was evaluated less favorably when mortality salience was high ($M = 4.63$; $SD = 1.76$) versus low ($M = 5.63$; $SD = 1.46$); $t(102) = 3.16$, $p = 0.002$, $d = 0.62$.

To see if recollected emotion would mediate the effect of mortality salience on movie experience evaluations, the PROCESS macro (Hayes (2013); Model 4, 5,000 iterations, 95% bias-corrected confidence intervals [CI] was used. Recollected emotion mediated the effect of mortality salience on evaluations (indirect effect = 0.2462, CI, 0.0545–0.6008). The direct effect (0.7528) of mortality salience on evaluations was significant ($t = 2.43$, $p = 0.02$, CI, 0.1376–1.3680). The results support complementary mediation (Zhao, Lynch, & Chen, 1988).

In support of H1, results from Study 3 indicate that numbing may be observed with self-reported perceptions of emotion. These results parallel findings from Studies 1 and 2. In support of H2, there is evidence that numbing may attenuate evaluations. The movie experience was evaluated less favorably when mortality salience was high, and this was a function of increased numbing. As mentioned previously, identifying that numbing can be detected when an individual reflects on or recalls a prior hedonic experience is an important contribution of the present research. Equally important was identifying if individuals numbed by mortality salience also exhibit a reduced ability to anticipate emotion in a future experience,

as theorized and empirically supported in prior research (Ben-Ezra et al., 2015; Blake et al., 1995; DeWall & Baumeister, 2006; Litz et al., 1997; Tull & Roemer, 2003). Thus, Study 4 shifted contexts from Studies 1, 2, and 3 to determine if mortality salience-induced numbing could be detected in a situation involving a future consumption experience.

6 | STUDY 4: NUMBING WHEN ANTICIPATING A PROSPECTIVE CONSUMPTION EXPERIENCE

Study 4 tested H1 and H2 using a consumption context where emotional considerations would be top of mind. Participants were endowed with a movie ticket to a local VIP theater. At the time of this study, VIP theaters offered an exclusive, high-end cinema experience, where movie goers could purchase assigned seats online and order from a full-service food and beverage menu directly to spacious, leather, reclining seats. In short, a premier movie experience could be enjoyed at a VIP theater. As with other hedonic experiences (Goode, Dahl, & Moreau, 2010; Mellers et al., 1999; Patrick et al., 2007), it was expected that participants would naturally think about the emotional and multisensory elements associated with the use of their ticket. Consistent with numbing, high mortality salience was expected to attenuate consumers' emotion-related expectations. Like Study 3, it was expected that numbed individuals would evaluate the movie experience as less attractive. Anticipating and consuming emotions is a significant part of a movie experience. Hence, the choice to focus on a special movie-going experience in this study.

6.1 | Methodology

Participants ($n = 46$, 57% female, $M_{\text{age}} = 23.65$; $SD_{\text{age}} = 7.33$) were recruited and remunerated \$10. After consenting, participants completed personality scales to support the same cover story used in the previous studies. Next, participants were given a gift card to keep for admission to a movie at a local VIP theater along with a description of the theater (see Appendix B). The mortality salience manipulation was administered, followed by the PANAS. Participants were then directed to "take a moment to think about using your ticket to see an upcoming movie. Consider what the experience will be like."

Participants were instructed, "While responding to the next set of questions, try to imagine what it would be like to watch a movie at the theater if you went next week." If mortality salience numbs, participants should associate less emotion with the movie experience as measured with the following items: "When you think about using your ticket and going to a movie, how happy does it make you feel right now?," "When you think about using your movie ticket, how does it make you feel right now?," "How much do you expect to enjoy your movie experience?," and "How much fun will your movie experience be?" ($\alpha = 0.91$) These items were adapted from Van Boven

and Ashworth's (2001) investigation, which, similar to this study, focused on anticipation of an experience's emotional qualities. To measure attractiveness of the VIP experience, participants indicated their agreement with the following items: "This experience would make a good memory," "I could see this experience as being a special event that would easily come to mind," and "I would probably tell others about this movie experience" (1 = *strongly disagree* and 7 = *strongly agree*; $\alpha = 0.83$).

6.2 | Results and discussion

There was no significant effect of mortality salience on negative, $\alpha = 0.88$; $t(44) = 0.07$, $p > 0.94$, or positive affect, $\alpha = 0.90$; $t(44) = 0.71$, $p > 0.25$. Less emotion was associated with the VIP movie experience when mortality salience was high ($M = 6.34$; $SD = 1.61$) versus low ($M = 7.36$; $SD = 1.40$); $t(44) = 2.27$, $p = 0.03$, $d = 0.68$. Similarly, the VIP movie experience was evaluated as less attractive when mortality salience was high ($M = 4.75$; $SD = 1.03$) versus low ($M = 5.48$; $SD = 1.14$); $t(44) = 2.27$, $p = 0.03$, $d = 0.67$. Mediation analysis was conducted as in Study 3. Emotion associated with the VIP movie experience mediated the effect of mortality salience on how attractive the experience was evaluated (indirect effect = 0.18, CI, 0.0338–0.3466). The direct effect (0.0657) of mortality salience on movie attractiveness was not significant ($t = 0.7749$, $p > 0.44$, CI, -0.1055 to 0.2368). The results support indirect mediation (Zhao, Lynch, & Chen, 2010).

In this study, H1 and H2 were supported. Consistent with numbing, self-reported perceptions of emotion were lower when mortality salience was high versus low, and this numbing rendered the VIP movie experience less attractive. Individuals numbed by mortality salience, again, exhibited a reduced ability to experience and anticipate emotion. Importantly, this is the first study in the literature to investigate how numbed individuals would respond in a context involving a prospective consumption experience.

7 | STUDY 5: NUMBING WITH DEATH-THEMED ADVERTISEMENTS

A major goal of Study 5 was to determine if numbing may be observed in response to in-market advertisements with death-related themes. Study 5 enabled a practical test of numbing and to ensure the results in Studies 1 through 4 could be replicated with real-world stimuli. Like Study 1, EEG was used to measure emotional response and attention.

7.1 | Methodology

Participants ($n = 171$, 50% female, $M_{\text{age}} = 33.38$; $SD_{\text{age}} = 10.28$) were recruited and remunerated as in Study 1. After consenting, participants were fitted with an EEG headset. GBA (emotional response) and BBA (attention) were measured. Participants were randomly assigned to two conditions. In the high mortality salience

condition, participants watched an advertisement for a stationery company, "Notes: a life story, a love story." Death becomes salient at the end of the advertisement when one of the two note writers dies. The low mortality salience condition used the same advertisement except content related to the note writer's death was removed. After watching the high or low mortality salience advertisements, participants watched an advertisement for Cisco Systems, "Pep Talk," celebrating the accomplishments of humanity. Next, participants watched an advertisement for Lucky Charms cereal, the "Mallow Debate." In this advertisement, friends happily debate the merits of their favorite marshmallow over a campfire until they are interrupted and scared by the appearance of a Sasquatch. All advertisements are available upon request and ran as paid in-market advertisements within the past 2 years.

Advertisements contain a mix of emotional and nonemotional content to create narratives that are relatable, believable, and informative. To test our numbing H1, the Cisco and Lucky Charms advertisements were coded for seconds that focused on eliciting emotion. This type of coding approach is standard practice for neuromarketing companies. Thus, upon consultation with a neuromarketing company, this approach was adopted. Specifically, it was expected that numbed participants would exhibit reduced GBA during the emotion-eliciting seconds in the Cisco and Lucky Charms advertisements and that GBA would be lower in the high versus low mortality salience condition. Mean GBA and BBA rates were calculated only for seconds aimed at eliciting emotion from advertisement viewers (25 of 82 s of advertising content). Like Study 1, GBA and BBA measurements were filtered (Szafir & Mutlu, 2012).

7.2 | Results and discussion

As expected and consistent with H1, GBA was significantly lower in the high ($M = 0.724$; $SD = 0.069$) versus low mortality salience condition ($M = 0.784$; $SD = 0.079$); $t(170) = 5.171$, $p < 0.001$, $d = 0.81$. BBA was not significantly different in the high ($M = 0.778$, $SD = 0.032$) versus low mortality salience condition ($M = 0.779$; $SD = 0.127$); $t(170) = 0.023$, $p > 0.05$, $d = 0.01$. Consistent with numbing, these results parallel findings in Study 1 in that increased mortality salience dampened subsequent emotional responses. Like Study 1, there is no suggestion that individuals stopped paying attention in response to death-themed content. Instead, there is additional evidence that the capacity to emotionally respond is temporarily diminished.

Numbing has been observed with traditional manipulations of mortality salience (Studies 1 through 4) and, now, with a more ecologically valid manipulation in Study 5. Participants were not prompted to reflect on past experience or to anticipate a future consumption experience. Rather, Study 5 was designed to detect numbing through the measurement of emotional responses while participants watched actual advertisements. The results of Study 5 suggest that emotion-evoking advertisements may be negatively affected if companies with death-themed advertisements

negotiate a lead placement. Most certainly, Cisco and General Mills hoped to elicit an emotional response with their advertisements with the goal of being better remembered by consumers. Practically, the results from this study might prompt companies to be cautious of placement and of the content in surrounding advertisements.

8 | GENERAL DISCUSSION

A character from a favorite television show passes away; a book you are reading touches on dying; a life insurance commercial airs on the radio while driving; a friend of a friend is diagnosed with a life-threatening disease; or, simply, thought of your own mortality slips unexpectedly into your mind. The awareness of death's inevitability, mortality salience, is a powerful threat to one's sense of meaning (Sarial-Abi et al., 2016). The present research advanced novel hypotheses regarding the capacity of mortality salience to numb. Across five studies, increased mortality salience resulted in a temporary insensitivity to emotional details and emotion-inducing situations.

Evidence of numbing was found in situations that involved recollection and reflection of emotional experiences (Studies 1, 2, and 3), the anticipation of a consumption experience (Study 4), and exposure to death-themed advertising content (Study 5). These contexts enabled a meaningful investigation of the hypothesized numbing when emotions and emotional details would be top of mind. Support for H1—that high versus low mortality salience would result in greater numbing—was found across all five studies. Downstream consequences of numbing were also found. Increased numbing reduced retrospective and prospective evaluations of movie experiences in Studies 3 and 4; thus, providing support for H2—that high versus low mortality salience would increase numbing and, in turn, reduce evaluations of a consumption experience.

Several contributions are made by the present research. Demonstrating that numbing is a response to mortality salience is a major contribution. A second contribution comes from identifying that numbing can be detected with self-reported perceptions of emotion, for example, in situations that involve consumers reflecting on or recalling prior experiences. Numbed individuals are less likely to remember a past event as emotional. This is a novel finding. Prior investigations of numbing have only identified that numbed individuals are less able to imagine strong emotions in future events (DeWall & Baumeister, 2006). The present research also makes an empirical contribution by replicating and extending this finding in the context of a consumption situation. The effect and relevance of numbing in consumption contexts have not been explored in prior research. Perhaps of greatest interest to marketing practitioners, the present research finds that advertising content is capable of numbing. Emotional responses to advertisements were attenuated when a lead advertisement contained death-related themes.

Practically, the present research might cause marketers to pause when placing advertisements in contexts that contain death-related content. Close proximity to death-related content has consequences for consumer perceptions and evaluations.

8.1 | Implications for mortality salience research

In the present research, lack of differences in self-reported positive and negative affect following the mortality salience manipulation is consistent with the “affect-free” claim in the literature. It is rare that elevated affect (feeling more negative or positive) is reported after a mortality salience task (Arndt, Allen, & Greenberg, 2001; Greenberg et al., 2000; Simon et al., 1997). Similarly, elevated affect following the mortality salience manipulation was not found in any of the current studies. Interestingly, Lambert et al. (2014) found differences in fear when items from the PANAS were analyzed separately. This difference was observed in three studies when a mortality salience condition was compared with a neutral control condition that had participants write about “mundane activities that they typically perform during the average day” (Lambert et al., 2014, p. 7). In a fourth study, greater fear was self-reported in a high versus low mortality salience condition, wherein the latter condition participants contemplated dental pain. A postanalysis did not reveal significant differences in PANAS items related to fear between the conditions in Studies 2, 3, or 4 (Appendix C); nor was there a significant difference in the neural measure of emotional response between the conditions in Study 1 during or directly following the mortality salience manipulation. Although these results are consistent with the “affect-free” claim in literature, the drop in emotional response between the actual manipulation and watching the movie in both the mortality and dental pain conditions of Study 1 warrants closer scrutiny of the affect-free claim. The findings of Study 1, as they relate to the “affect-free” claim, are discussed in Section 7.3. The present research increases understanding of how contemplating death may temporarily affect one’s ability to conjure, feel, or anticipate emotion. In short, contemplating death did not make people feel more or less bad or good but, rather, seemed to make people temporarily numb—a novel finding in the literature.

8.2 | Implications for research on experiences

Understanding factors that enhance or undermine the benefits of hedonic consumption experiences is an important focus in the consumer behavior literature (Cooney, Gilbert, & Wilson, 2014; Diehl, Zauberger, & Barasch, 2016; Goode et al., 2016; Zauberger, Ratner, & Kim, 2009). The present research contributes to this literature by identifying mortality salience as a factor capable of undermining the emotional significance and benefits of a consumption experience. A hedonic experience offers benefits (or utility) in advance of consumption when a consumer fantasizes about the experience, during the experience, and after when a consumer enjoys thinking back on and reliving the experience in their mind (Bar-Anan,

Wilson, & Gilbert, 2009; Bryant, 2003; Lee & Qiu, 2009; Van Boven & Ashworth, 2001; Veroff & Bryant, 2007). Thus, if a memory loses its emotional significance, as observed in Study 2, it may be devalued, and utility from retrospective savoring may be diminished. Similarly, when the emotion associated with a prospective experience is reduced, as seen in Study 4, the pleasure from anticipation may be negatively affected. Less time spent fantasizing about a hedonic experience may result in some consumers delaying or opting out of an experiential purchase.

8.3 | Limitations and future directions

One might imagine that the adventure movies in Studies 1 and 3 could have increased mortality salience. If this were true then two possible effects may be expected. First, if the movies increased mortality salience independent of the manipulation then no differences in numbing between the conditions would be observed. The opposite was found. Emotional response (Study 1) and recollected emotion (Study 3) were significantly lower in the high versus low mortality salience conditions—results consistent with numbing. Second, one might envision that the prompts in the high mortality salience condition might make participants prone to thinking about dying during the skating or skydiving movies. Is this really problematic? At worst, this effect may have increased the strength of the mortality salience manipulation but does not explain why increased numbing was detected in the high mortality salience conditions of these studies. Further, considering the results across all five studies, which used a variety of situations, should allay possible concerns with the movies used in Studies 1 and 3.

One might interpret findings from prior research as offering evidence contrary to results in the present paper. Based on three experiments, DeWall and Baumeister (2007) suggest that people orient toward positive associations when mortality is more versus less salient. In their three experiments, the mortality salience manipulation was administered the same as Studies 1 through 4 in the present research, a design commonly used in the literature. With two of their experiments, participants went on to complete a word-stem completion task. Each word stem could be completed to form a positive emotion or neutral word. With their other experiment, participants completed a lexical judgment task. The goal was to determine how much participants favored positive word associations as a function of high versus low mortality salience. From these studies, it was concluded that “thinking about death fosters an orientation toward emotionally pleasant stimuli” (DeWall & Baumeister, 2007, p. 989). These experiments used tasks very different from the situations in the present research. In the present research, participants were put in situations where emotions and emotional qualities would be top of mind as when reflecting on or savoring a prior hedonic experience, anticipating a prospective consumption experience, or viewing emotion-inducing advertisements. The findings in the present research and in DeWall and Baumeister (2007) are not contrary but, rather, highlight a potential boundary condition. Numbing may only be

detected in situations that require personally meaningful responses to more complex stimuli.

One might wonder if the findings of Study 1 in Randles, Heine, and Santos (2013) contradicts the present research. There are key differences to appreciate along with opportunities for future research. First, a brief overview of the potentially contradictory study is provided. Randles et al. (2013) administered acetaminophen or a sugar placebo followed by the same mortality salience manipulation used in the present research. The PANAS was administered and then participants set a bail amount for a prostitute who had been arrested. The underlying assumption was that taking acetaminophen might inhibit pain or distress caused by high mortality salience and so participants would not judge the prostitute as harshly. The prostitute was judged most harshly and the bail was set the highest in the high versus low mortality salience condition when no acetaminophen was administered. If mortality salience numbs, one might have expected no differences between these conditions. This may highlight a potential boundary condition for mortality salience-induced numbing. Situations that challenge core beliefs, as the prostitute scenario is assumed to do, might have the capacity to reverse the numbing effect of mortality salience. The contexts and key dependent measures are extremely different between the present research and Randles et al. (2013). Nonetheless, these differences may be useful in motivating future research and in understanding how to reduce or reverse numbing.

Theorizing in the social exclusion literature suggests that numbing occurs because the emotional system temporarily shuts down (DeWall & Baumeister, 2006). Meaningful responses to emotional stimuli or imagining strong emotional reactions in future events are attenuated when one experiences social rejection, and these types of responses are also observed in PTSD (Baumeister et al., 2009; Ben-Ezra et al., 2015; Blake et al., 1995; Litz et al., 1997; Tull & Roemer, 2012; Twenge et al., 2001). Interestingly, it is not clear why the emotional system might temporarily shut down in response to meaning threats like social exclusion and increased mortality salience. However, results from Study 1 may offer insight. Emotional response and attention peaked during the mortality salience manipulation and then dropped as the study progressed. It is conceivable that this level of emotional response is consuming and temporarily exhausts the ability to respond to subsequent emotional stimuli or situations. It is also conceivable that thought suppression may result in emotion suppression. When death-related thoughts become active, suppression of these thoughts quickly follows (Arndt et al., 2007; Greenberg et al., 2000). Future research should replicate and explore further the neural and emotional underpinnings of numbing and its antecedents. Future research may also ensure that numbing would be observed in consumption situations involving negative emotions. Though a potential limitation of the present research, only positive consumption experiences were used because numbing has been previously observed with aversive situations involving social exclusion.

It would be beneficial if future investigations replicated Study 1 and included a condition that had participants contemplate a neutral event, such as eating (as in Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). The results of such a study may provide insight into the cause of numbing. Imagine observing elevated

emotion while participants contemplated mortality and dental pain in comparison to eating: Followed by a significant attenuation of emotion in the mortality versus eating condition while participants watched and reflected on the movie experience. Such a pattern of results would reflect that numbing occurs because of the emotionally consuming nature of contemplating one's own mortality. This explanation for numbing is advanced, though not empirically tested, in social exclusion research. The lack of a control condition with a neutral event in Studies 1 through 4 limits exploration into the specific antecedents of numbing and is, therefore, an important direction to pursue.

Future replications using an EEG-based study similar to Study 1 with a neutral event control condition would also provide insight into *when* mortality salience numbs. Does this occur immediately after contemplating mortality or following a brief delay? Further, imagine if a neural measure revealed a significant attenuation of emotion immediately after participants contemplated death versus eating. Would such results be contrary to prior characterizations of mortality salience as "affect-free" (Arndt et al., 2001; Greenberg et al., 2000; Simon et al., 1997)? As discussed previously, it is rare to find differences in affect between high and low mortality salience conditions. In fact, there is speculation that the PANAS, a widely used measure in mortality salience research, is too insensitive to detect affective differences (Lambert et al., 2014). Indeed, we observed no difference in positive or negative affect in Studies 2, 3, or 4 where we used the PANAS, but we did observe a difference between the high and low mortality salience conditions when a neural measure of emotion was used and when participants reflected on the movie experience (Study 1). Importantly, this difference was consistent with numbing.

8.4 | Conclusions

The present research increases understanding of the immediate experiential effects of mortality salience. Contemplating death can temporarily numb. This numbing effect may be of concern given the importance of recollected emotion in savoring memories, the role of emotion and emotional considerations in advertisement responses and in motivating the purchase and consumption of hedonic experiences. Findings from five studies increase appreciation of the malleability of emotion-related perceptions and the capacity of mortality salience to influence these perceptions. With the present research, the hope is to inspire further work that examines relationships among mortality salience, experiential reactions, emotions, and emotion-related perceptions and to increase marketer' understanding of how consumers may be affected by death-themed content.

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APPENDIX A: POSTTEST OF MORTALITY SALIENCE MANIPULATION IN STUDIES 1–4

Similar to Rindfleisch, Burroughs, and Wong (2009), two posttests of the mortality salience manipulation was conducted with two separate groups of participants. With the first posttest, participants ($n = 84$, 59% female, $M_{\text{age}} = 56.90$; $SD_{\text{age}} = 12.05$) were remunerated \$10 and were randomly assigned to respond to the two prompts in the high or low mortality salience condition. After, the PANAS was administered (Watson, Clark, & Tellegen, 1988).

The Linguistic Inquiry and Word Count (LIWC) 2015 software was used to analyze participants' written responses in the mortality salience manipulation (Pennebaker, Booth, Boyd, & Francis, 2015). As expected, the percentage of death-related words as a proportion of the total number of words written by each participant, including grammatical terms, was greater in the high ($M = 1.52$, $SD = 2.67$) versus low mortality salience low conditions ($M = 0.31$, $SD = 1.46$); $t(82) = 2.61$, $p = 0.01$, $d = 0.56$. For example, words coded as relating to death by LIWC 2015 included dying, die, death, soul, spiritual, heaven, afterlife, purgatory. Positive affect ($\alpha = 0.91$) did not differ between the high ($M = 2.51$; $SD = 0.82$) and low ($M = 2.68$; $SD = 0.79$) mortality salience condition, $t(82) = 0.98$, $p > 0.250$, $d = 0.21$ nor did negative affect ($\alpha = 0.91$) significantly differ between the high ($M = 1.52$; $SD = 0.72$) and low ($M = 1.34$; $SD = 0.52$) mortality salience conditions, $t(82) = 1.28$, $p = 0.21$, $d = 0.29$.

With the second posttest, participants ($n = 58$, 66% female, $M_{\text{age}} = 24.71$; $SD_{\text{age}} = 7.01$) were remunerated \$10 and were randomly assigned to the high or low mortality salience condition. Next, the PANAS was administered along with a series of personality questions. Last, participants indicated their agreement with two items, "During this study, did you find yourself thinking about death" and "During this study, did you find yourself thinking about dental pain?" (1 = *strongly disagree*, 7 = *strongly agree*). Participants in the high ($M = 2.79$) versus low ($M = 1.31$) mortality salience condition reported thinking more about death, $t(56) = 3.66$, $p < 0.01$. Participants in the high ($M = 1.48$) versus low ($M = 2.79$) mortality salience condition reported thinking less about dental pain, $t(56) = 2.51$, $p = 0.02$.

APPENDIX B: VIP THEATER DESCRIPTION PROVIDED TO PARTICIPANTS IN STUDY 4

As a token of appreciation for your participation in today's research, you will be given a VIP movie ticket.

This movie ticket can be used at VIP movie theatres that offer a luxurious environment designed to make the movie a dazzling sensory experience. You will enjoy large screen projection, surround sound, and reserved custom leather seating. Relax and watch the movie while also enjoying in-seat food and beverage services. Popcorn and pop can be ordered, but you will also have access to an extended menu with alcoholic beverages and restaurant style food.

Please raise your hand, and the research assistant will bring you your ticket.

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APPENDIX C: MEANS OF SELF-REPORTED ITEMS RELATED TO FEAR OR ANXIETY IN STUDIES 2, 3, AND 4

	Afraid	Scared	Nervous	Jittery	Distressed
Study 2					
High mortality salience condition	1.87	2.20	2.03	2.27	2.10
Low mortality salience condition	1.81	1.93	2.30	2.07	2.15
t-Value	0.86	0.41	0.45	0.53	0.17
Study 3					
High mortality salience condition	1.71	1.96	2.19	2.13	2.15

(Continues)

Low mortality salience condition	1.55	1.89	2.20	2.16	2.09
t-Value	0.93	0.32	0.04	0.16	0.23
Study 4					
High mortality salience condition	1.52	1.70	1.96	2.09	2.13
Low mortality salience condition	1.48	1.61	2.09	2.26	1.74
t-Value	0.17	0.30	0.42	0.56	0.13

Note. The PANAS, not the PANAS-X was used in these studies; hence, reporting of individual items differ slightly between the present research and Lambert et al. (2014).