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The Effects of Mortality Salience on Interest in Death (and Life) Among High Openness Individuals

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The Effects of Mortality Salience on Interest in Death (and Life) Among High Openness
Individuals

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
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ABSTRACT

Terror management theory suggests that the fear of death is ubiquitous. Only recently has death been examined as something potentially interesting from this framework, and specifically, to individuals high in trait openness (Boyd, Morris, & Goldenberg, 2017). This research, however, did not clearly delineate if participants were actually becoming interested in death. My studies address this ambiguity by examining what high openness individuals are becoming interested in and if the way death is construed impacts interest. Study 1 tested if in addition to becoming more generally interested, high openness individuals become interested in death per se following mortality salience (relative to a control), as Boyd et al. (2017) speculated. Analyses revealed that individuals high in experiential openness only became more interested in death if the death interest measure came after a scale of general interest (i.e., after a longer delay). In contrast to predictions, individuals high in general openness did not exhibit these effects. In Study 2, I hypothesized that high openness individuals would become more interested in art and philosophy following mortality salience (relative to a control) because of the relevance of these domains to openness. This hypothesis was not supported. In Study 3, I tested if highlighting death's experiential or intellectual qualities would increase general interest and subsequently decrease death anxiety, depending on if one's unique brand of openness valued such qualities. Only when death was construed of in an experiential manner (relative to a control) did individuals high in experiential openness become more generally interested, and unexpectedly, more anxious about death. Together these studies demonstrate that the aspect of openness related to valuing

experience can actually increase one's interest in death, and when death is construed in a way that corresponds with this type of openness, general interest also increases.

INTRODUCTION

Humans are able to utilize their vast cognitive power to project into and plan for the future, all in an effort to stave off death. But eventually death will arrive and humans are fully aware of this inevitability. Because of this, when people contemplate their mortality—even in the absence of an immediate physical threat—negative emotions like fear, anxiety, and even outright terror, can arise. An entire literature within social psychology exists to examine how individuals cope with reminders of their mortality to assuage their fear of death (terror management theory; Pyszczynski, Greenberg, & Solomon, 1999). While terror in response to the prospect of one's own death is certainly understandable, this research examines whether some of the same qualities that make death terrifying can also be interesting to some. Specifically, individuals who are open and interested in novel experiences and information—those possessing heightened levels of the personality trait openness—are hypothesized to respond more positively to death and even find it interesting. Indeed, recent research demonstrates that people high in trait openness respond to reminders of their mortality with increased feelings of interest and decreased defensiveness (Boyd, Morris, & Goldenberg, 2017; Boyd, Goldenberg, Morris, & Puryear, 2019). But this research stops short of distinguishing if these individuals are actually becoming interested in death, in and of itself, are becoming generally interested, or if they are becoming interested in content that engages their openness (e.g., aesthetic experiences and ideas). The primary goal of my research is to first determine where the interest provoked by death is being aimed by high openness individuals, and the secondary goal is to examine what qualities of death (i.e., the experiential or intellectual) make it so interesting, depending on a person's particular brand of

openness (i.e., experiential or intellectual openness). In doing so, I hope to identify the individuals and conditions under which engaging with death can motivate one's interest in death as well as life.

Terror Management Theory

The human fear of death is considered to be ubiquitous, and to cope with this fear, people utilize a variety of physical and psychological defenses. By using their intelligence, humans are able to successfully stockpile resources, evade threats, and form relationships, all to fulfill instincts aimed at self-preservation. At the same time, this intelligence allows them to recognize that such efforts are futile and that death is inevitable. This causes them to also engage in psychological defenses aimed at coping with the fear of death. Terror management theory formally outlines these psychological defensive strategies and proposes that culture is the critical ingredient with which death anxieties can be quelled (Pyszczynski et al., 1999). Based on the writings of cultural anthropologist Ernest Becker (1973), this theory maintains that culture allows for an individual's unique thoughts, works, and even one's offspring to live on, beyond any one individual's life. Thus, from this perspective, culture serves a critical death-denying function in the quest for symbolic immortality.

There are two specific ways that terror management theory proposes individuals can combat death anxieties. The first is by successfully defending meaningful cultural frameworks, either symbolically or literally, when they are attacked (worldview defense), and the second is by living up to the standards prescribed by one's culture (self-esteem striving) (Greenberg, Solomon, & Pyszczynski, 1997). Empirical support for such responses has been shown after asking individuals to consider dying (e.g., "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”), compared to other topics that are aversive (e.g., “describe the emotions that the thought of dental pain arouses in you” and “jot down as specifically as you can, what you think will happen to you as you physically experience dental pain”) (e.g., Jonas, Schimel, Greenberg, & Pyszczynski, 2002). After one’s mortality is made salient through experimental priming (i.e., mortality salience), cultural worldview defense and self-esteem striving become exaggerated. Other less common mortality salience inductions (closed-ended true/false questionnaires, subliminal primes, and word scrambles) typically produce similar responses (Burke, Martens, & Faucher, 2010).

Both worldview defense and self-esteem striving can occur in a variety of ways. For example, worldview defense can be accomplished by defending one’s religion, political orientation, or country when they are attacked (Greenberg et al., 1990; McGregor et al., 1998; Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992). Self-esteem striving can occur in a variety of domains, but critically, it depends on the specific domains from which one derives self-esteem (*contingencies of self-worth*; Crocker, Luhtanen, Cooper, & Bouvrette, 2003). For example, individuals who derive self-esteem from driving or being environmentally friendly boost efforts to drive more riskily and become more environmentally friendly following mortality salience (Ben-Ari, Florian, & Mikulincer, 1999; Vess & Arndt, 2008; Fritsche & Häfner, 2012). Further, individuals who derive self-esteem from their romantic relationships exhibit greater perceived regard toward their relationship partner and increase their levels of commitment to that relationship following mortality salience, compared to an aversive comparison group (Cox & Arndt, 2012). In sum, the extent to which individuals derive self-esteem from their driving skills, environmental friendliness, or romantic relationships predicts if steps will be taken to boost their self-esteem within these specific domains after being reminded

of their mortality. There is also evidence demonstrating the efficacy of worldview defense and self-esteem striving in decreasing death ideation, providing additional support for the idea that these responses do in fact reduce death anxiety (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997). Despite the ubiquity of these traditional terror management responses following mortality salience inductions, not all individuals respond similarly to them. Accordingly, dispositions that predict attenuated defensive responses following mortality salience will be discussed in the next section.

Individuals Responding Non-Defensively to Death. Even though the domains that individuals invest in to create meaningful worldviews can help assuage the fear of death, the extent to which worldviews need to be defended or bolstered depends on the characteristics an individual possesses. That is, certain types of individuals may not exhibit the need to defend their worldviews if mortality reminders do not affect them as strongly. General trait self-esteem is one such disposition directly linked to whether or not an individual engages in worldview defenses following mortality salience inductions. In fact, TMT asserts that the primary function of self-esteem is to keep death thoughts at bay (Greenberg, Pyszczynski, & Solomon, 1986). In a sense, self-esteem can be seen as a shield that defends against death thoughts: the greater one's self-esteem, the more effectively death can be combated.

Earlier terror management research tested the theoretical framework for the function of self-esteem in managing death anxieties by examining the relationship between self-esteem, worldview defense, and death-thought accessibility. Researchers demonstrated that prior to a mortality salience induction (relative to a control), if one's self-esteem was boosted (e.g., by providing positive personality feedback) or if one had high dispositional self-esteem, worldview defense and death-thought accessibility did not increase (Harmon-Jones et al., 1997). In contrast,

when participants were provided with negative feedback following an IQ test, death-thought accessibility increased (Hayes, Schimel, Faucher, & Williams, 2008). A study examining individuals with mild depression (which is associated with low self-esteem; Sowislo & Orth, 2013) also demonstrated that mortality salience caused these individuals to more vigorously defend their worldviews after they were threatened, relative to those who were not depressed (Simon, Greenberg, Harmon-Jones, Solomon, & Pyszczynski, 1996). Together this research demonstrates that possessing high levels of self-esteem does indeed insulate individuals from having to think about and defend against death, and having low levels of self-esteem causes individuals to be more strongly affected by death reminders and respond defensively to them.

Mindfulness, defined as having the ability to be present in the moment and acknowledge one's emotions without becoming attached to them, is another trait shown to impact whether or not individuals respond defensively following mortality salience inductions. Niemiec and colleagues (2010) demonstrated that individuals high in trait mindfulness did not engage in worldview defenses following mortality salience across a number of studies, but those low in mindfulness did. Further, individuals with higher levels of trait mindfulness did not immediately suppress death thoughts following mortality salience, but instead, let them in (Study 7). This suggests that individuals high in mindfulness do not become defensive following mortality salience, like most others do, because they do not actively suppress thoughts of death. In fact, they let them in. Recent research also demonstrates that having American participants engage in mindfulness meditation (without prior experience doing so) eliminated worldview defense following mortality salience, relative to those who did not meditate (Park & Pyszczynski, 2017).

Research on self-esteem and mindfulness reveals that some individuals can respond less defensively to mortality salience inductions, and in the case of mindfulness, the manner in which

death is confronted can impact whether or not defensive responses occur. On the basis of this research, we know that traditional terror management defenses (e.g., self-esteem striving and worldview defense) following mortality salience are not inevitable. It follows that there may also be personality differences that set people up to manage reminders of their mortality in a different manner, and less defensively, just as self-esteem and mindfulness do. But in addition to responding less defensively, it may also be the case that mortality reminders can even positively impact certain personality types, motivating them to grow from and engage with life after as a way of managing encounters with death.

Openness and Death. Openness is a Big Five personality trait shown to insulate individuals from having to engage in traditional terror management defenses in the wake of mortality salience inductions (Boyd et al., 2017). Not only this, high openness individuals even exhibit positive responses following mortality salience in the forms of increased interest and state self-esteem (Boyd et al., 2017; Boyd et al., 2019). Openness is defined as having the desire to engage with abstract ideas, and sensory and perceptual experiences, and to the extent that death can be viewed as an abstract topic or an experience, it may not be surprising that such positive responses occur for high openness individuals after being reminded of their mortality. Despite the fact that death is referenced consistently throughout one's life, there is still a shroud of mystery that surrounds it, and for those motivated to engage with it, benefits should occur. In short, instead of managing the awareness of one's mortality by responding defensively, those high in openness may instead respond positively and with interest because of death's unique intellectual and experiential characteristics.

Research utilizing openness as a moderator of terror management effects was first conducted in light of the fact that death can be considered a novel experience, and it follows that

individuals highly receptive to novelty (e.g., those high in openness) should be particularly drawn to and interested in it (Boyd et al., 2017). To determine the merit of this rationale, defensive responses by participants with heightened levels of openness were measured following mortality salience across three studies. In the first study, openness was measured, mortality salience was manipulated, and intentions to use Facebook was used as a proxy for self-esteem striving. Following mortality salience (relative to a control), low openness individuals exhibited a desire to use Facebook (to the extent that their identity was invested in it), while those high in openness did not. In the second study, again, high openness individuals were insulated from having to engage in worldview defense following mortality salience (relative to a control), and those low in openness were not. In this study, worldview defense was operationalized by the amount of bail assessed for an individual arrested for prostitution (as in Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). In the third study, to examine why high openness individuals were not responding defensively, state interest was measured as a mediator of effects between mortality salience and worldview defense responses. Interest was predicted to increase following mortality salience, and in turn, to be associated with decreased worldview defense thereafter, but only for those high in openness due to the fact that death is a novel experience. Results supported predictions, but because of how interest was operationalized (i.e., as a general state), it was not clear whether the interest exhibited by high openness individuals was focused on death in and of itself, was oriented toward engaging with other novel experiences and topics related to openness, or was indiscriminately occurring. That is, the position taken by Boyd and colleagues (2017) was that those high in openness were becoming interested in death because of its novel experiential qualities, but such interest may also extend to other novel experiences and ideas. This, however, was not something that research was equipped to distinguish between.

Despite these limitations, it provided the first evidence that in the face of death, openness can facilitate positive outcomes, and importantly, interest plays a critical role in these processes.

At the same time Boyd and colleagues (2017) were conducting their research, a separate research group was also uncovering evidence that openness can promote other positive outcomes following mortality salience. Across two studies, individuals with heightened levels of openness were found to exhibit shifts toward more intrinsically motivated orientations following sustained mortality salience inductions (6 days), relative to controls (Prentice, Kasser, & Sheldon, 2017). No effects were found for those individuals low in openness. These results overlap with results from Boyd and colleagues (2017) involving interest, on account of the relationship that intrinsic motivation is theorized to have with interest (Deci & Ryan, 2000; Silvia, 2006, p. 197). Furthermore, the relationship that interest has been theorized to have with information-seeking (Silvia, 2006) and the positive relationship intrinsic motivation has with learning success (Lin, McKeachie, & Kim, 2003) may also indicate that death is provoking high openness individuals to engage with death (and life), so that they can understand it. But again, whether or not such information-seeking is focused on death, is oriented toward other things related to the construct of openness, or is more generally activated, remains unclear.

To examine the willingness of high openness individuals to engage with and potentially benefit from encounters with death, Boyd and colleagues (2019) measured automatic responses toward death following mortality salience using openness as a moderator (Study 2). In this study, a lexical decision task was utilized whereby half of the participants were instructed to push a joystick as quickly as possible (the other half were instructed to pull the joystick) if a word presented to them was real (or not). Embedded within the words they were asked to respond to were death-related words. Results indicated that individuals high in openness exhibited slower

response times aimed at pushing death-related words away, following mortality salience (compared to a control), and that individuals low in openness exhibited faster response times aimed at pushing death-related words away (Boyd et al., 2019). Critically, high openness individuals were even found to benefit from pushing death-related content away more slowly, demonstrated by their subsequent increase in self-esteem. This was the first research to demonstrate that not only do high openness individuals exhibit positive responses following mortality salience in the form of interest and intrinsic orientations, but they may also be automatically drawn to death, and even benefit from dwelling upon death.

Together, research examining interest, intrinsic orientations, and the automatic responses among high openness individuals following death reminders paints a picture whereby mortality salience can be seen as a catalyst for those high in openness, where death is propelling them to engage with their environment, and in doing so, they are able to reap positive benefits. It is important to reiterate that even though high openness individuals do not exhibit traditional terror management responses, they still respond to and are affected by reminders of their mortality. These responses are instead rooted in interest and intrinsic orientations, both of which are integral to this personality trait. However, exactly where the interest and intrinsic orientations provoked in high openness individuals following mortality salience are oriented, is not yet understood. That is, it remains unclear whether mortality salience is only causing individuals high in openness to become more generally interested, or if it is also provoking them to become interested in and engaged with death, as well as life's aesthetic and intellectual experiences. Reviewing openness further may help to shed some light on this ambiguity.

Openness as a Big Five Trait

Personality researchers McCrae and Costa (1997) describe openness as being “seen in the breadth, depth, and permeability of consciousness, and in the recurrent need to enlarge and examine experience” (p. 826). Trait openness has a strong overlap with intellectual ability, creativity, as well as curiosity (DeYoung, 2011; Nusbaum, Silvia, & Beaty, 2017; DeYoung, 2015), and is also associated with being able to come up with numerous solutions to problems as well as creative solutions to problems (i.e., “divergent thinking”) (Silvia, Nusbaum, Berg, Martin, & O’Connor, 2009). Indeed, the benefits of having heightened levels of openness are quite extensive. At face value though, it may seem that engaging with a subject like death would be in direct opposition to the motivations that drive high openness individuals to value enlarging the human experience (how can one derive or examine experiences in death?); however, the novelty and unknown qualities surrounding death may be what makes it potentially so appealing for them. Examining the underlying aspects of openness may provide clues as to how those high in openness are able to respond positively in the wake of death reminders.

Two Aspects of Openness. Efforts have recently been made to define and measure openness more precisely. In general, researchers have converged on a more nuanced understanding of openness, whereby it is defined and empirically validated as being comprised of two aspects: an appreciation for cultural and experiential pursuits (i.e., the “experiential” aspect of openness) as well as intellectual ones (i.e., the “intellectual” aspect of openness) (Connelly, Ones, & Chernyshenko, 2014; DeYoung, Quilty, & Peterson, 2007). DeYoung (2015) describes the experiential aspect of openness as relating to how individuals engage with perceptual or sensory information, and the intellect aspect relating to how individuals engage with abstract information. Additionally, his description of these two aspects are based on earlier

empirical studies examining and providing support for each of these two aspects (DeYoung et al., 2007). In the introductory sentence of an article examining how each aspect of openness predicts different routes toward interest, Fayn and colleagues (2017) proclaim that any debate involving what to call openness is over, due to overwhelming evidence supporting the idea that it is comprised of two aspects (p. 265).

Each of the two aspects of openness are also uniquely related to achievement in a variety of domains. For example, the experiential aspect of openness is related to general creative achievement, whereas the intellectual aspect is related to fluid reasoning (Nusbaum & Silvia, 2011). Kaufman and colleagues (2016) extended this initial research and provided evidence demonstrating how the experiential aspect of openness is specifically related to creativity within the arts, whereas the intellectual aspect is predictive of creativity within the sciences (Kaufman et al., 2016). Their research points toward the idea that each aspect of openness can predict creative achievement, but the extent to which creative achievement is operationalized in a manner that relates to each of the two aspects of openness (i.e., artistic vs. scientific creativity) is what determines the predictive validity of each.

Kaufman (2013) examined the aspects of openness further and described how each can be seen as relating to how information is processed, just as Fayn and colleagues (2017) echoed a similar sentiment, describing each aspect of openness as informing *how* individuals engage with their environments. It follows that each aspect of openness ought to also predict the manner in which individuals become drawn to or interested in potentially interesting stimuli, including death. Examination of interest appraisals involving each aspect of openness indicates that individuals high in the experiential aspect of openness exhibit more interest, arousal, and pleasure when viewing art, compared to those low in this aspect (Fayn, MacCann, Tiliopoulos, &

Silvia, 2015a). Heightened levels of the intellectual aspect of openness (compared to low) were only found to be associated with increased understanding of the art (but not interest), demonstrating how the ability to digest, appreciate, and process novel and complex stimuli is uniquely tied to each aspect of trait openness. Additional research examining interest in response to literary quotations demonstrates that both the experiential as well as intellectual aspects of openness predict overall interest—but with one caveat—the extent to which appraisals of interest occurred for the intellect aspect of openness depended on if participants understood the quotations, but not for the experiential aspect of openness (Fayn, Tiliopoulos, & MacCann, 2015b). This second piece of research demonstrates that high intellect individuals may be better able to process and understand complex information, which in turn facilitates interest under certain circumstances. In contrast, those high in the experiential aspect of openness can find complex information interesting, even if they are confused. Because the aforementioned research outlines how each aspect of openness relates to the occurrence of interest stemming from relatively innocuous stimuli, such responses may be amplified with a more provocative topic, such as the experience or topic of one's mortality. That is, each aspect of openness likely also determines how mortality salience is processed and how interesting it may be when it is seen in various lights (i.e., as an experience or a topic, as complex or unknown, or as being novel).

It is notable that the manner in which openness has been measured in past terror management research (Boyd et al., 2017; Boyd et al., 2019) has utilized broader conceptualizations of openness that did not distinguish between its two aspects. Additionally, the researchers that did use more exhaustive openness scales (Prentice et al., 2017) used openness as a moderator in their analyses by standardizing and creating a single composite measure of openness derived from three scales (e.g., Big Five Mini-Markers, Saucier, 1994; Big Five Aspect

Scale, DeYoung et al., 2007; Rumination-Reflection Questionnaire, Trapnell & Campbell, 1999).

It should be noted that these methodological and analytical techniques do not make the results any less meaningful. On the contrary, this research provides a foundation with which additional research can be conducted. Accordingly, by using more nuanced scales of openness to measure what becomes so interesting to open individuals following death reminders, further insight can be gained about *why* death facilitates such interest in high openness individuals. In doing so, a better understanding can occur for how to deliver messages involving death reminders in ways that are less likely to lead to defensiveness and more likely to lead to interest.

Relationship between Openness and Trait Curiosity

Other constructs closely related to openness should also be considered if additional research examining how mortality salience facilitates interest in high openness individuals is conducted. The construct of curiosity appears to be the most important, due to the overlap it shares with openness (DeYoung, 2015). Mussel (2010) found it difficult to establish the discriminant validity of scales measuring curiosity, due to the positive relationship some curiosity scales, such as the Curiosity and Exploration Inventory (CEI; Kashdan, Rose, & Fincham, 2004), had with openness (ideas facet) ($r = 0.46$) (Borkenau & Ostendorf, 1993). The HEXACO-60 (Ashton & Lee, 2009), a more general scale of openness also exhibited a positive, but slightly weaker relationship with the CEI ($r = 0.19$). While developing the Curiosity and Exploration Inventory-II (CEI-II; Kashdan et al., 2009), again, a large degree of overlap was exhibited between it and a general measure of openness ($r = 0.51$), as measured by the NEO-PI (Costa & McCrae, 1992). In research examining the role of openness and mindfulness in terror management processes, Kashdan and colleagues (2011) found a strong positive relationship between the CEI-II and general openness ($r = 0.51$), as measured by the NEO-FFI (Costa &

McCrae, 1992). More recently, another scale of curiosity called the Five-Dimensional Curiosity scale (5DC) was developed, which measures five different facets of curiosity (Kashdan et al., 2018). In developing this scale, each dimension of curiosity was found to positively correlate with an established general measure of openness (Mini-International Personality Item Pool; Donnellan, Oswald, Baird, & Lucas, 2006). Specifically, there were positive relationships between openness and the dimensions of curiosity termed “joyous exploration” ($r = 0.50$), “deprivation sensitivity” ($r = 0.33$), “stress tolerance” ($r = 0.32$), “thrill seeking” ($r = 0.21$), and “social curiosity” ($r = 0.15$). Such results are unsurprising in light of the fact that many openness measures directly measure curiosity as a facet of the overall construct (see “curiosity” facet of Hogan Personality Inventory; Hogan & Hogan, 2007). Further, in factor analyses conducted by Woo and colleagues (2014) examining many different items across various openness measures, “curiosity” emerged as a factor. As such, to expand upon past terror management research using openness as moderator of effects, related curiosity measures need to be taken into account.

OVERVIEW OF RESEARCH AND HYPOTHESES

To definitively determine what high openness individuals become interested in following mortality salience – something that Boyd and colleagues (2017) speculated about, but never directly examined – and the qualities of death that may facilitate such interest, openness was measured across three studies, mortality salience was manipulated, and three different forms of interest were measured: (1) interest in death, (2) interest in aesthetic experiences and intellectual content, and (3) general state interest. In addition to general openness, a scale measuring the two aspects of openness (e.g., experiential and intellectual) as well as a multi-faceted curiosity scale were administered at the beginning of each study. These more nuanced measures were used in separate analyses—in addition to the general measure of openness—to examine if they similarly predicted effects.

In the first study, mortality salience was manipulated in the typical open-ended fashion and participants were given a state interest measure as well as a scale measuring their interest in death. High openness individuals were hypothesized to become more generally interested following a mortality salience induction, relative to a control, and critically, they were also expected to become more interested in death, providing support for the untested assumption of Boyd and colleagues (2017). Then, in Study 2, to examine the novel idea that the interest facilitated by and oriented toward death for high openness individuals can also propel them to become more engaged with things in life, mortality salience was manipulated, and interest in visual art and philosophical quotations was assessed, because of their association with experiential and intellectual openness (Fayn et al., 2015a; Fayn et al., 2015b). High openness

individuals were hypothesized to become more interested in aesthetic experiences (i.e., visual art) and intellectual content (i.e., philosophical quotations) after being reminded of their mortality, relative to a control. Additionally, individuals high in the experiential aspect of openness were hypothesized to increase their levels of interest oriented specifically toward aesthetic experiences after being reminded of their mortality (relative to a control), whereas their high intellectual openness counterparts were hypothesized to increase their levels of interest oriented specifically toward intellectual content. In Study 3, to determine if certain qualities of death provoke interest in individuals possessing specific types of openness, an open-ended mortality salience prompt highlighting death's experiential, intellectual, or general qualities was administered (an aversive comparison group was also used). Then, general state interest was measured and death anxiety was assessed. Because each aspect of openness uniquely predicts an interest in things that engage it (DeYoung, 2015), I hypothesized that state interest would increase the most for individuals high in experiential openness (i.e., openness aspect of openness) when death's experiential qualities were highlighted (relative to the dental pain group), and that state interest would increase the most for individuals high in intellectual openness (i.e., intellectual aspect of openness) when death's intellectual qualities were highlighted (relative to the dental pain group). Each of these responses were in turn expected to decrease how anxious about death these individuals were. In sum, across three studies, mortality salience was hypothesized to increase general state interest, interest in death, and also one's interest in aesthetic experiences and intellectual content for high openness individuals, and when death was construed in specific ways, interest was expected to increase as a function of one's specific brand of openness.

STUDY 1

To determine if individuals high in openness do in fact become more interested in death after they are reminded of their mortality, as Boyd and colleagues (2017) speculated, following a mortality salience manipulation, participants were given a 12-item scale measuring their interest in death. To determine if a similar pattern emerged for interest in general, participants were also asked to report their state interest after a mortality salience induction, using a validated, and more comprehensive measure of state interest compared to past research (Boyd et al., 2017). Because state interest and the scale measuring one's interest in death were administered sequentially, the presentation order was counterbalanced. High openness individuals were predicted to exhibit increased state interest following a mortality salience induction, relative to the dental pain group. Interest oriented toward death was also expected to increase for high openness individuals following mortality salience based on the rationale offered by Boyd and colleagues (2017), that death represents a quintessential novel experience.

Hypothesis 1: Openness was hypothesized to moderate state interest following mortality salience, relative to the dental pain group. Specifically, high openness individuals were hypothesized to exhibit increased state interest following mortality salience (lows were hypothesized to decrease), relative to the dental pain group.

Hypothesis 2: Openness was hypothesized to moderate interest in death following mortality salience, relative to the dental pain group. Specifically, high openness individuals were

hypothesized to exhibit increased interest in death following mortality salience (lows were hypothesized to decrease), relative to the dental pain group.¹

Method

Participants

Participants were recruited online through Amazon mTurk and compensated \$0.45 in exchange for their time. A power analysis was conducted using an R^2 increase of 0.03 to detect an interaction (based on research conducted by Boyd et al., 2017), an alpha of 0.05, and power of 0.80. It was determined that 295 participants would be needed. Four hundred twenty-one participants were recruited, but after excluding individuals who did not pass an attention check, a final sample of 358 participants were analyzed (181 female, 172 male, 1 “none apply to me,” 1 “would rather not say,” and 3 who did not report; $M_{age} = 36.21$). The ethnic breakdown consisted of 5.1% Asian/Pacific Islander, 8.2% Black/African American, 4.2% Hispanic/Latino, 2.3 % Native American, 75.8% White/Caucasian, 3.9% Multi-Racial, and 0.6% “other.”

Procedure

This study was advertised on Amazon mTurk as an examination of “Personality and Opinions.” After agreeing to a waiver of consent, participants completed three personality measures: An aspect measure of openness (e.g., experiential and intellectual aspects of openness as in DeYoung et al., 2007), a five-facet measure of curiosity (5DC; Kashdan et al., 2018), and a brief Ten-Item Personality Inventory measuring openness (TIPI; Gosling, Rentfrow, & Swann, 2003). Following the personality measures, participants were randomly assigned to an open-

¹ To determine if the aspects of openness (i.e., experiential or intellectual) or facets of curiosity predicted state interest or interest in death like general openness, additional analyses were conducted by replacing general openness with each of these two aspects and five facets. Due to the exploratory nature of these analyses, no specific predictions were made. Because the dependent variables in Study 2 and independent variable in Study 3 were expected to be related to the aspects of openness, specific predictions were made for each aspect in the final two studies.

ended mortality salience induction (or the dental pain control group) after which a 66-item measure of affect was administered, as is typical in terror management research. Then participants were given a state interest measure and a scale measuring their interest in death (counterbalanced), and finally, demographic information was assessed.

Materials²

Aspect Level Openness. To measure openness at the aspect level, the Big Five Aspect Scale was used (BFAS; DeYoung et al., 2007; Appendix A). Two aspects of openness were measured within the BFAS. The first aspect—experiential openness—involves an appreciation for culture, aesthetics, and a willingness to engage with new experiences (e.g., “get deeply immersed in music” and “see beauty in things that others might not notice”). The second aspect—intellectual openness—encompasses a willingness to think deeply, engage with abstract ideas, and appreciate complexity (e.g., “have difficulty understanding abstract ideas [reverse scored]” and “think quickly”). Participants rated the degree to which they believed each statement described them on a 1-5 scale (*strongly disagree* to *strongly agree*). Four items within the 10-item experiential openness aspect scale and four within the 10-item intellectual openness aspect scale were reverse scored. Both scales exhibited good reliability ($\alpha > 0.80$).

Trait Curiosity. In order to measure a variable with a large degree of conceptual overlap with openness and also potentially relevant to one’s interest in death, a curiosity measure was administered after the BFAS (5DC; Kashdan et al., 2018; Appendix B). The 25-item scale measured five dimensions of trait curiosity (e.g., joyous exploration, deprivation sensitivity, stress tolerance, social curiosity, and thrill seeking), with five items comprising each dimension. Joyous exploration measured how much individuals enjoyed engaging in activities they found

² Means, standard deviations, and bivariate correlations between measured variables are provided at the end of the results sections in each of the three studies.

pleasurable (e.g., “I am always looking for experiences that challenge how I think about myself and the world”). Deprivation sensitivity measured the motivation to be curious about things to resolve psychological tension from not knowing (e.g., “I can spend hours on a single problem because I just can't rest without knowing the answer”). Stress tolerance measured one’s ability to tolerate novelty and uncertainty (e.g., “I cannot handle the stress that comes from entering uncertain situations”). Social curiosity measured curiosity about interpersonal relationships (e.g., “I like finding out why people behave the way they do”). Thrill seeking measured one’s willingness to engage in risky behavior to derive pleasure (e.g., “The anxiety of doing something new makes me feel excited and alive”). Participants responded to questions on a scale ranging from 1-7 (*does not describe me at all to completely describes me*). All five scales exhibited good reliability ($\alpha > 0.83$).

General Openness. Individual differences in general openness and other Big Five dimensions were measured with the TIPI (Gosling et al., 2003; Appendix C), using two items for each dimension (as in Boyd et al., 2017; Boyd et al., 2019). The two items for openness (“open to new experiences” and “conventional, uncreative” [reverse scored]) were averaged ($r(358) = 0.21, p < .001$) to create an openness score. Participants rated the degree to which they believed each item described them, with responses ranging from 1-7 (*disagree strongly to agree strongly*). Past research indicates that the openness subscale exhibits good test-retest reliability ($r = .62$), and correlates positively with other established openness measures (e.g., Big-Five Inventory; $r = .65$) (Gosling et al., 2003).

Mortality Salience. Participants were randomly assigned to answer two open-ended response prompts related to death or dental pain (Harmon-Jones et al., 1997; Jonas et al., 2002; Appendix D). In the mortality salience condition, participants were asked to, “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.” In the dental pain group, participants were asked to, “Please briefly describe the emotions that the thought of dental pain arouses in you,” and “Jot down as specifically as you can, what you think will happen to you as you physically experience dental pain.” Participants were asked to respond with their “gut-level” reactions to the prompts. Word count for responses within each condition were also examined, and revealed no differences, suggesting that any effects that do occur cannot be attributed to the amount of content participants wrote.³

PANAS-X. To examine affective differences in response to mortality salience, participants were given a 66-item questionnaire adapted from Watson and Clark (1994) (Appendix E). Lambert et al. (2014) expanded the PANAS-X to include additional items (e.g., “fearful” and “terrified”) for a 5-item fear scale, and Boyd et al. (2017) further expanded the PANAS-X to include “intrigued” and “curious” for a 3-item interest scale.⁴ The usual positive and negative affect subscales from the original measure were also assessed. Typically, the positive and negative affect subscales include 10 items each, but “interested” was removed from the overall positive affect scale, leaving nine items, so it was not confounded with the more specific interest-related affect items being measure, and “afraid” and “scared” were removed

³ Three separate regression analyses were conducted using general openness, experiential openness, and intellectual openness as moderating variables, mortality salience (0=control, 1=death) as the independent variable, and word count length for the open-ended response prompts as the dependent variable ($M = 49.70$, $SD = 40.77$, skew = 2.02) in PROCESS (Model 1; Hayes, 2018). Neither openness, experiential openness, nor intellectual openness interacted with mortality salience to predict the number of words written ($ps > .625$). Furthermore, none of the individual openness variables predicted word count either ($ps > .193$).

⁴ A Model 1 analysis was run to determine if mortality salience (0=control, 1=death) interacted with general openness to predict the interest subscale on the PANAS-X (3-items) in each of the three studies. In Studies 1 and 2 there were not significant interactions ($ps > .102$), but in Study 3 there was a trending interaction ($p = .090$), but no significant conditional effects at high and low levels of openness ($ps > .231$).

from the overall negative affect scale, leaving eight items for similar reasons. Participants indicated on a 1-5 scale (*very slightly or not at all to extremely*) the extent to which they felt each emotion. All four scales demonstrated good reliability ($\alpha > 0.86$). The positive, negative, and fear-related affect subscales were used as covariates to determine if holding these variables constant would impact state interest or interest in death due to the relationship exhibited between these variables and interest following mortality salience (Boyd et al., 2017). Across all three studies, primary hypotheses were examined with and without these affective control variables.

State Interest. Following the mortality salience manipulation, to determine if individuals high in openness became more interested in general after thinking about their mortality, compared to the dental pain group, participants were given a 12-item questionnaire adapted from the Melbourne Curiosity Inventory to measure state interest (Naylor, 1981; Appendix F). Participants responded to items asking them to rate how they felt, at that moment (e.g., “I am intrigued by what is happening” and “my curiosity is aroused”). Participants answered each item on a scale ranging from 1-4 (*not at all to very much so*). This scale exhibited excellent reliability ($\alpha = 0.95$).

Interest in Death. Then to determine if high openness individuals also became interested in death following mortality salience, compared to the dental pain group, participants were instructed to answer a set of 12 questions adapted from the Melbourne Curiosity Scale (Appendix G) oriented toward death (e.g., “I am intrigued by death” and “my curiosity in death is aroused”). Participants answered each item on a scale ranging from 1-4 (*not at all to very much so*). This scale also exhibited excellent reliability ($\alpha = 0.97$). The 12-item scale measuring one’s interest in death and the 12-item scale measuring general state interest (see above) were also counterbalanced. One additional item was included near the end of the Interest in Death

scale as an attention check (e.g., “For this item, please select the ‘moderately so’ response”). Any participant who did not answer the attention check item correctly was excluded from analyses.

Demographics. Participants were asked about their age, gender, ethnicity, religiosity, spirituality, education level, and if they had experienced dental pain (Appendix K).⁵ Religiosity and spirituality were used as control variables in subsequent analyses, alongside the different types of affect mentioned above because the former two can attenuate mortality salience effects (Jonas & Fischer, 2006).

Results

Hypothesis 1: Openness Predicting State Interest following Mortality Salience

First, to determine if interest presentation order interacted with openness ($M = 4.86$, $SD = 1.33$, skewness = -0.20) and the mortality salience prompt to predict state interest ($M = 2.43$, $SD = 0.81$, skew = -0.18), a regression analysis was performed using the PROCESS macro for SPSS (Model 3, Hayes, 2018). Across all studies, all lower-order interactions and individual effects are analyzed simultaneously in the same regression, however, only significant lower-order interactions and individual effects will be reported. Because the three-way interaction was not significant ($p = .109$),^{6,7} results were collapsed across interest presentation order.⁸ This time openness, mortality salience, and their interaction were entered into the regression to determine

⁵ For all analyses where significant effects were found (Studies 1-3), controlling for dental pain in each analysis did not extinguish the significant overall interactions or conditional effects.

⁶ Within high openness individuals (84th percentile), the interaction between presentation order and mortality salience was significant ($p = .011$), whereby there was a trending effect for high openness individuals given the state interest measure first (prior to the interest in death measure), in which they were exhibiting increased state interest following mortality salience, relative to the control, $b = 0.36$, $SE = 0.18$, $t(349) = 1.96$, $p = .051$, $CI = [-0.001, 0.73]$. Those high in openness given the state interest measure second (following the interest in death measure) were descriptively exhibiting less state interest following mortality salience relative to the control, $b = -0.34$, $SE = 0.20$, $t(349) = -1.69$, $p = .091$, $CI = [-0.74, 0.06]$.

⁷ After controlling for positive ($p < .001$), negative ($p = .163$), and fear-related affect ($p = .047$), as well as religiosity ($p = .106$) and spirituality ($p = .374$), the overall 3-way interaction was still not significant ($p = .816$).

⁸ Presentation order was also treated as a covariate in a separate Model 1 analysis, and not found to be a significant covariate ($p = .389$).

if openness moderated state interest (Model 1). For state interest, neither openness, $b = 0.05$, $SE = 0.03$, $t(353) = 1.40$, $p = .163$, 95% confidence interval (CI) = [-0.02, 0.11], nor mortality salience (control=0, death=1), $b = -0.07$, $SE = 0.08$, $t(353) = -0.78$, $p = .437$, CI = [-0.24, 0.10] significantly predicted state interest. As seen in Figure 1, the openness x mortality salience interaction was also not significant, $b = 0.06$, $SE = 0.06$, $t(353) = 0.90$, $p = .371$, CI = [-0.07, 0.18].

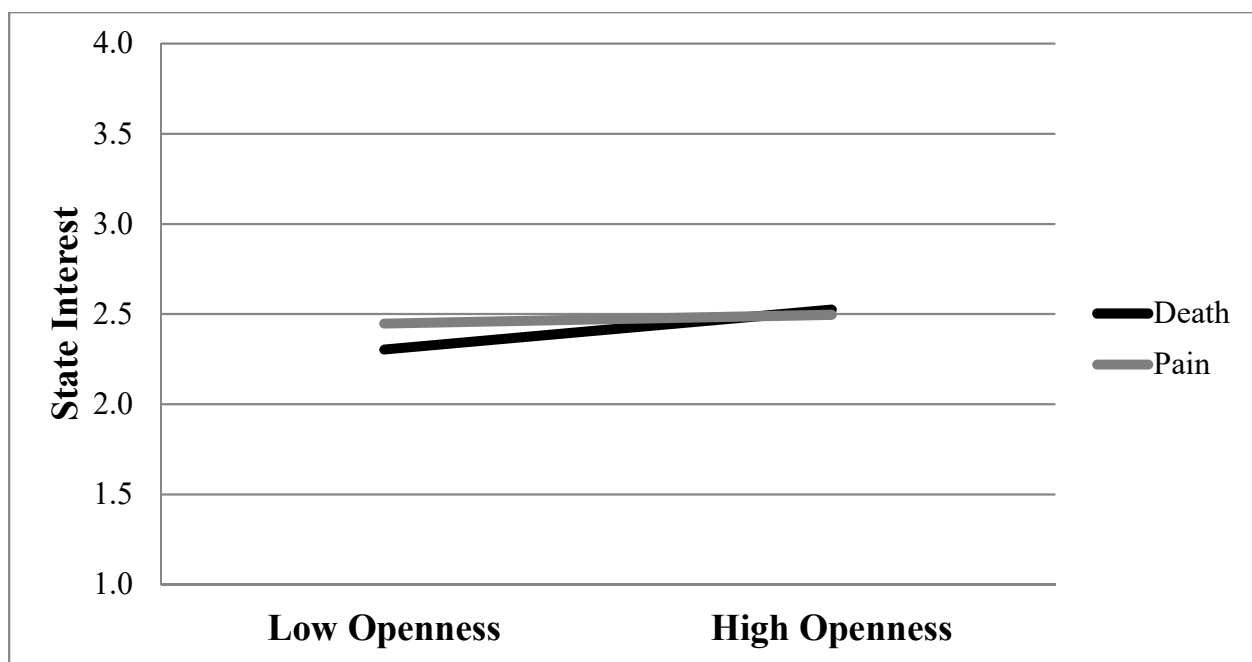


Figure 1. Openness x mortality salience predicting state interest.

After controlling for positive affect, $b = 0.43$, $SE = 0.04$, $t(345) = 11.36$, $p < .001$, CI = [0.35, 0.50], negative affect ($p = .208$), fear-related affect, $b = 0.13$, $SE = 0.06$, $t(345) = 2.14$, $p = .033$, CI = [0.01, 0.25], religiosity, $b = -0.03$, $SE = 0.02$, $t(345) = -1.98$, $p = .049$, CI = [-0.07, -0.002], and spirituality ($p = .230$), the overall openness x mortality salience interaction was trending toward significance, $b = 0.09$, $SE = 0.05$, $t(345) = 1.74$, $p = .082$, CI = [-0.01, 0.19]. To probe this trending interaction, conditional effects at the 16th and 84th percentiles of openness

were examined.⁹ A significant conditional effect for low openness individuals was uncovered, whereby mortality salience was decreasing state interest, relative to the control, $b = -0.20$, $SE = 0.10$, $t(345) = -2.03$, $p = .043$, $CI = [-0.38, -0.006]$. No conditional effects were found for those high in openness ($p = .517$).

Experiential Openness Predicting State Interest following Mortality Salience. A similar procedure using the experiential aspect of openness ($M = 3.66$, $SD = 0.69$, skewness = -0.03) was used to determine if this aspect performed any differently than general openness in predicting state interest. Just as with the general openness measure, an analysis was first conducted to determine if the interest presentation order interacted with experiential openness and the mortality salience prompt to predict state interest, using PROCESS (Model 3). Intellectual openness was controlled for ($p = .063$) in an effort to isolate the effects of experiential openness.¹⁰ The analysis revealed a significant three-way interaction between openness x mortality salience x interest presentation order, $b = -0.68$, $SE = 0.25$, $t(347) = -2.75$, $p = .006$, $CI = [-1.16, -0.19]$. A significant mortality salience x interest presentation order interaction, $b = -0.36$, $SE = 0.17$, $t(347) = -2.19$, $p = .029$, $CI = [-0.69, -0.04]$, and effect of openness, $b = 0.19$, $SE = 0.07$, $t(347) = 2.77$, $p = .006$, $CI = [0.06, 0.33]$ were also found. To examine this three-way

⁹ Within Figure 1, as well all other analyses examining openness, experiential openness, or intellectual openness as moderators of effects, “low” and “high” levels of openness are considered such only in reference to those with average levels of openness (i.e., those at the 16th percentile of scores are considered “low” in openness and those at the 84th percentile are considered “high” in openness). For general openness, across all three studies the average was always above the midpoint of the seven-point scale, and for experiential and intellectual openness, the averages were always above the midpoint of the five-point scales. For Studies 1, 2, and 3 the 16th and 84th percentile values for general openness were 3.50/6.50, 4.00/6.30, and 3.72/6.50, respectively. For experiential openness they were 3.00/4.40 (Study 1), 3.00/4.40 (Study 2), and 3.10/4.40 (Study 3). For intellectual openness they were 3.00/4.40 (Study 1), 3.10/4.37 (Study 2), and 3.00/4.30 (Study 3). These slight negative skews (across all three studies, skews were between -0.003 and -0.24) are worth considering because what is “low” in openness may be somewhat inflated given the propensity of participants to see themselves as slightly more open.

¹⁰ The 3-way remained significant when intellectual openness was not included as a covariate in the analysis ($p = .010$). For the sake of consistency, across all studies, when one aspect of openness was examined as a moderator of effects, the other aspect of openness was controlled (i.e., if experiential openness was tested as a moderator of effects, then intellectual openness was controlled for in each analysis). If general openness was being examined as a moderator of effects, these covariates were not appropriate, and therefore not included.

interaction, two-way interactions between the effect of mortality salience and the effect of the interest presentation order were examined within high and low experiential openness individuals. Among those high in experiential openness (84th percentile), there was a significant mortality salience x interest presentation order interaction, $b = -0.87$, $F(347) = 12.28$, $p < .001$, but not among those low in experiential openness (16th percentile) ($p = .732$). This significant interaction within high experiential openness individuals was probed further at each level of the mortality salience manipulation (0 = dental pain, 1 = death) as well as interest presentation order levels (0 = state interest first, 1 = state interest second). As in Figure 2, for those high in experiential openness, mortality salience (relative to the control) functioned to decrease state interest, but only when the state interest was presented second (i.e., following the interest in death measure), $b = -0.62$, $SE = 0.19$, $t(347) = -3.30$, $p = .001$, $CI = [-0.98, -0.25]$. State interest did not differ across levels of the mortality salience manipulation when the state interest measure was presented first (prior to the interest in death measure), though descriptively effects were in the opposite direction, $b = 0.25$, $SE = 0.16$, $t(347) = 1.55$, $p = .122$, $CI = [-0.07, 0.58]$. The overall 3-way was no longer statistically significant ($p = .068$) after including positive, negative, and fear-related affect, as well as religiosity and spirituality, as covariates in the analysis, but the significant conditional effect of mortality salience for high experiential openness individuals given the state interest measure second remained ($p = .001$).¹¹

¹¹ An additional Model 1 analysis was conducted to determine if experiential openness interacted with mortality salience to predict state interest collapsing across interest presentation order (controlling for intellectual openness). The 2-way interaction was not significant ($p = .522$), even after controlling for affect and types of religiosity ($p = .800$). After controlling for the effect of presentation order within the analysis ($p = .433$), without the aforementioned covariates, the interaction still was not significant ($p = .562$).

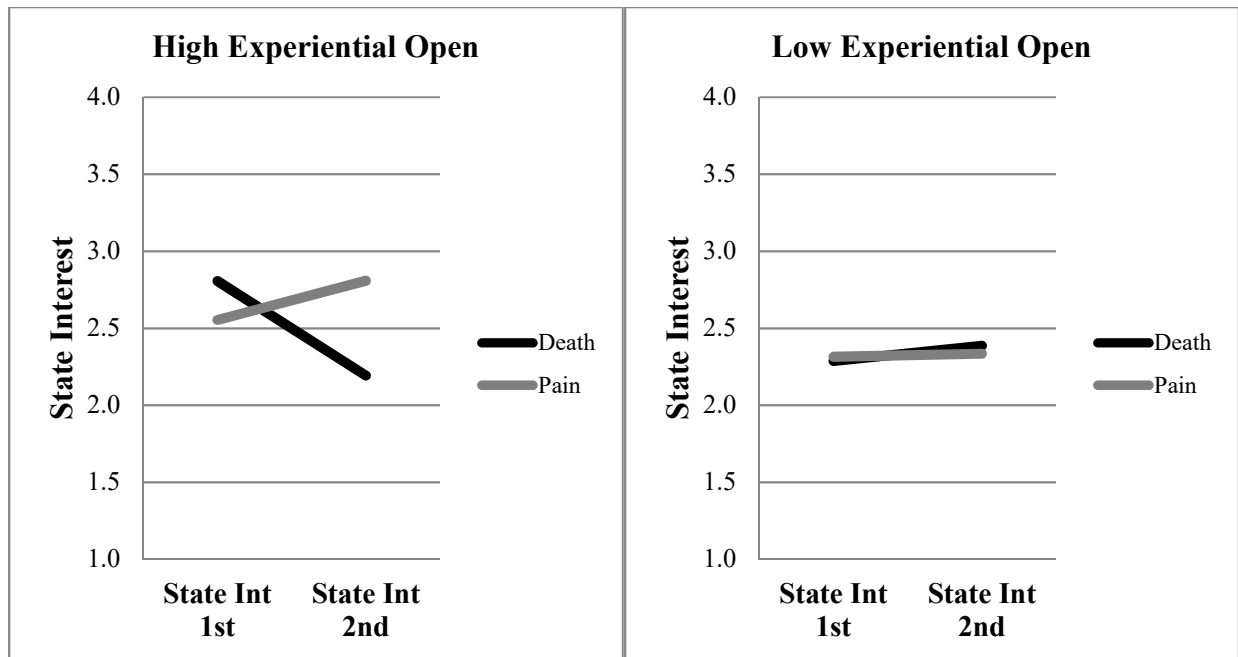


Figure 2. Experiential openness x mortality salience x interest presentation order predicting state interest.

Intellectual Openness Predicting State Interest following Mortality Salience. The intellectual openness x mortality salience x interest presentation order interaction was examined (controlling for experiential openness; $p = .001$) and not found to be significant ($p = .102$), even after controlling for different types of affect and religiosity ($p = .377$). Since there was no effect of interest presentation order, a Model 1 analysis was conducted to determine if intellectual openness interacted with mortality salience in predicting state interest collapsing across interest presentation order (controlling for experiential openness; $p = .004$). The overall 2-way interaction was not significant ($p = .816$) even after controlling for types of affect and religiosity ($p = .603$).¹²

¹² After controlling for the effect of presentation order within the analysis ($p = .408$), without the aforementioned covariates, the interaction still was not significant ($p = .819$).

Hypothesis 2: Openness Predicting Interest in Death following Mortality Salience

Once again, to determine if interest presentation order interacted with general openness and mortality salience in predicting interest in death ($M = 2.06$, $SD = 0.90$, skewness = 0.23), a regression examining the interaction term between these three variables was conducted (PROCESS; Model 3). The overall 3-way was not significant ($p = .162$), even after controlling for affect and religiosity measures ($p = .759$).¹³ Effects were once again collapsed across interest presentation order (Model 1). As seen in Figure 3, for interest in death, the effect of openness was trending toward significance, $b = -0.06$, $SE = 0.04$, $t(354) = -1.71$, $p = .088$, $CI = [-0.13, 0.01]$, but mortality salience was not, ($p = .169$), nor was the openness x mortality salience interaction ($p = .876$).¹⁴

Experiential Openness Predicting Interest in Death following Mortality Salience.

Intellectual openness was controlled for ($p = .287$) in an analysis examining the interactive effects of experiential openness x mortality salience x interest presentation order on interest in death (PROCESS; Model 3). A significant three-way interaction emerged, $b = -0.74$, $SE = 0.28$, $t(348) = -2.62$, $p = .008$, $CI = [-1.30, -0.18]$. No other lower-order interactions or individual effects were significant ($p > .141$). For those high in experiential openness, there was a significant mortality salience x interest presentation order interaction, $b = -0.77$, $F(348) = 7.23$, $p = .008$, but not those low in experiential openness ($p = .306$). For those high in experiential openness, mortality salience (relative to the control) significantly increased interest in death, but only when the interest in death measure was presented second (i.e., after a longer delay), $b =$

¹³ All covariates including positive ($p < .001$), negative ($p = .007$), and fear-related affect ($p = .037$), as well as spirituality ($p = .011$) were significant in this analysis, but religiosity was not ($p = .387$).

¹⁴ In a separate Model 1 analysis, presentation order was not found to be a significant covariate ($p = .226$), nor did it meaningfully change the openness x mortality salience interaction ($p = .811$). Additionally, including positive ($p < .001$), negative ($p = .008$), and fear-related affect ($p = .037$), as well as religiosity ($p = .412$) and spirituality ($p = .010$) as covariates in the analysis also did not meaningfully change the interaction ($p = .974$).

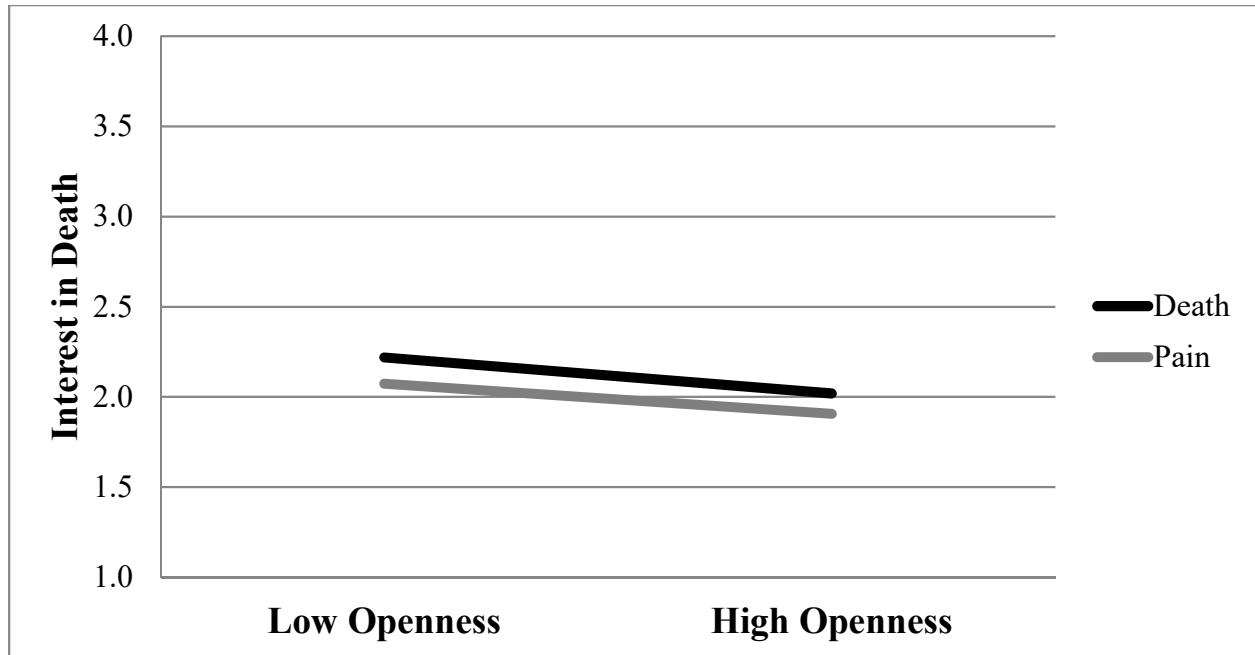


Figure 3. Openness x mortality salience predicting interest in death.

0.43, $SE = 0.19$, $t(348) = 2.27$, $p = .024$, $CI = [0.06, 0.80]$. As can be seen in Figure 4, when the interest in death measure was presented first, these effects were not significant ($p = .113$), although descriptively, they were in the opposite direction, $b = -0.34$. After controlling for positive, negative, and fear-related affected, as well as religiosity and spirituality, the overall 3-way for interest in death treating experiential openness as a moderator followed a similar pattern ($p = .040$).¹⁵

Intellectual Openness Predicting Interest in Death following Mortality Salience. The intellectual openness x mortality salience x interest presentation order interaction was examined (controlling for experiential openness; $p = .904$) and not found to be significant ($p = .182$), even

¹⁵ An additional Model 1 analysis was conducted to determine if experiential openness interacted with mortality salience to predict interest in death collapsing across interest presentation order (controlling for intellectual openness). The 2-way interaction was not significant ($p = .817$), even after controlling for affect and types of religiosity ($p = .963$). After controlling for the effect of presentation order within the analysis ($p = .189$), without the aforementioned covariates, the interaction still was not significant ($p = .741$).

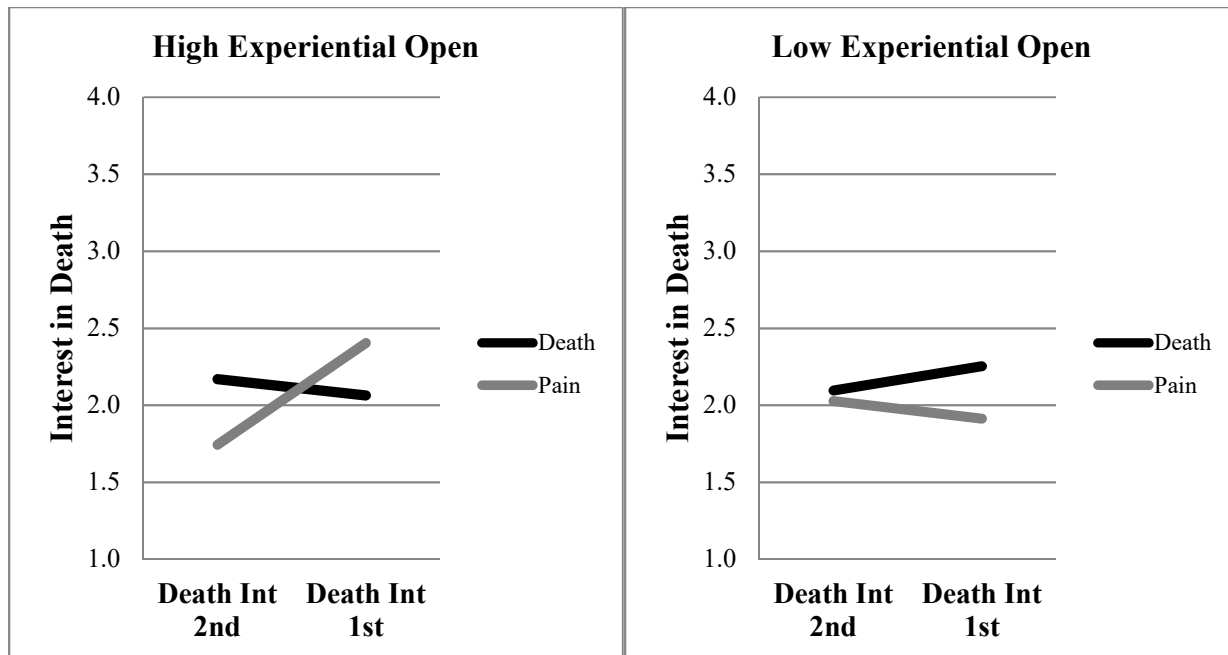


Figure 4. Experiential openness x mortality salience x interest presentation order predicting interest in death.

after controlling for different types of affect and religiosity ($p = .331$). An additional Model 1 analysis was conducted to determine if intellectual openness interacted with mortality salience in predicting interest in death collapsed across interest presentation order (controlling for experiential openness; $p = .960$). The overall 2-way interaction was not significant ($p = .201$), even after controlling for types of affect and religiosity ($p = .558$).¹⁶

Exploratory Analyses: Facets of Curiosity

To examine if any of the five dimensions of trait curiosity (e.g., joyous exploration, deprivation sensitivity, stress tolerance, social curiosity, and thrill seeking) interacted with the interest presentation order and mortality salience to predict state interest or interest in death, 10

¹⁶ After controlling for interest presentation order within the analysis ($p = .191$), without the aforementioned covariates, the interaction was still not significant ($p = .196$).

Model 3 regressions were run.^{17,18,19} The joyous exploration x mortality salience x interest presentation order interaction was significant for state interest, $b = -0.28$, $SE = 0.13$, $t(349) = -2.19$, $p = .029$, $CI = [-0.53, -0.01]$. A significant mortality salience x interest presentation order interaction, $b = -0.42$, $SE = 0.16$, $t(349) = -2.69$, $p = .008$, $CI = [-0.72, -0.11]$, and effect of joyous exploration, $b = 0.27$, $SE = 0.03$, $t(349) = 8.60$, $p < .001$, $CI = [0.21, 0.33]$, were also found. As can be seen in Figure 5, there was a significant mortality salience x interest presentation order interaction for high joyous exploration individuals, $b = -0.77$, $F(349) = 12.09$, $p < .001$, but not low ($p = .863$). For high joyous exploration individuals primed with mortality salience, relative to the control, when state interest was presented first (i.e., prior to the interest in death measure), state interest significantly increased, $b = 0.35$, $SE = 0.15$, $t(349) = 2.35$, $p = .019$, $CI = [0.06, 0.65]$. Additionally, when the state interest measure was presented second (i.e., following the interest in death measure), state interest decreased following mortality salience, relative to the control, $b = -0.42$, $SE = 0.16$, $t(349) = -2.56$, $p = .011$, $CI = [-0.74, -0.10]$. These effects remained (overall 3-way, $p = .027$) when positive, negative, and fear-related affected, as well as religiosity and spirituality were included as covariates in the analysis.

Furthermore, as seen in Figure 6, the joyous exploration x mortality salience x interest presentation order interaction was significant for interest in death, $b = -0.31$, $SE = 0.15$, $t(350) = -2.03$, $p = .043$, $CI = [-0.61, -0.01]$, as was the effect of joyous exploration, $b = 0.17$, $SE = 0.04$,

¹⁷ With the exception of a trending three-way interaction for thrill seeking predicting interest in death ($p = .097$), all other three-way interactions (besides joyous exploration, which is reported on) were above the threshold of significance ($ps > .155$).

¹⁸ Ten Model 1 regressions were also run in PROCESS collapsed across interest presentation order to determine if each of the five facets of curiosity interacted with mortality salience in predicting state interest or interest in death. There was a trending stress tolerance x mortality interaction for state interest ($p = .075$), but none of the other nine interactions approached significance ($ps > .159$).

¹⁹ Because of the null effects for deprivation sensitivity and social curiosity in Study 1, only joyous exploration, stress tolerance, and the thrill-seeking dimensions of curiosity were included in the remaining studies in an effort to facilitate participant attention.

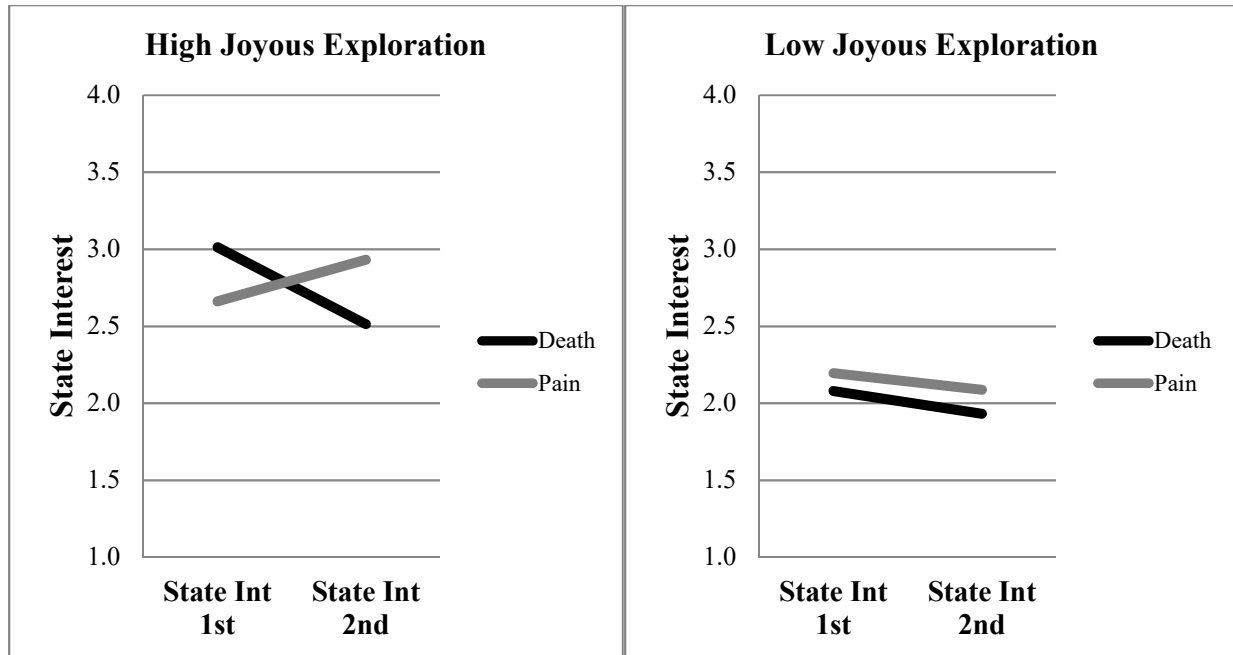


Figure 5. Joyous exploration x mortality salience x interest presentation order predicting state interest.

$t(350) = 4.49, p < .001, CI = [0.10, 0.24]$. There was a significant mortality salience x interest presentation order interaction for high joyous exploration individuals on interest in death, $b = -0.63, F(350) = 5.65, p = .018$, but not low ($p = .527$). For high joyous exploration individuals primed with mortality salience, relative to the control, when interest in death was presented second (i.e., when there was a longer delay between the mortality salience prime and interest in death measure), there was a trending positive effect, $b = 0.34, SE = 0.18, t(350) = 1.88, p = .061, CI = [-0.02, 0.69]$, but no effect for high joyous exploration individuals when the death interest measure was presented first ($p = .135$), though descriptively effects were in the opposite direction. Finally, when different types of affect and religiosity were included as covariates in the analysis, while the overall 3-way did not meaningfully change ($p = .034$), the positive trending conditional effect of mortality salience for high joyous exploration individuals given the interest in death measure second (i.e., longer delay) became significant ($p = .026$).

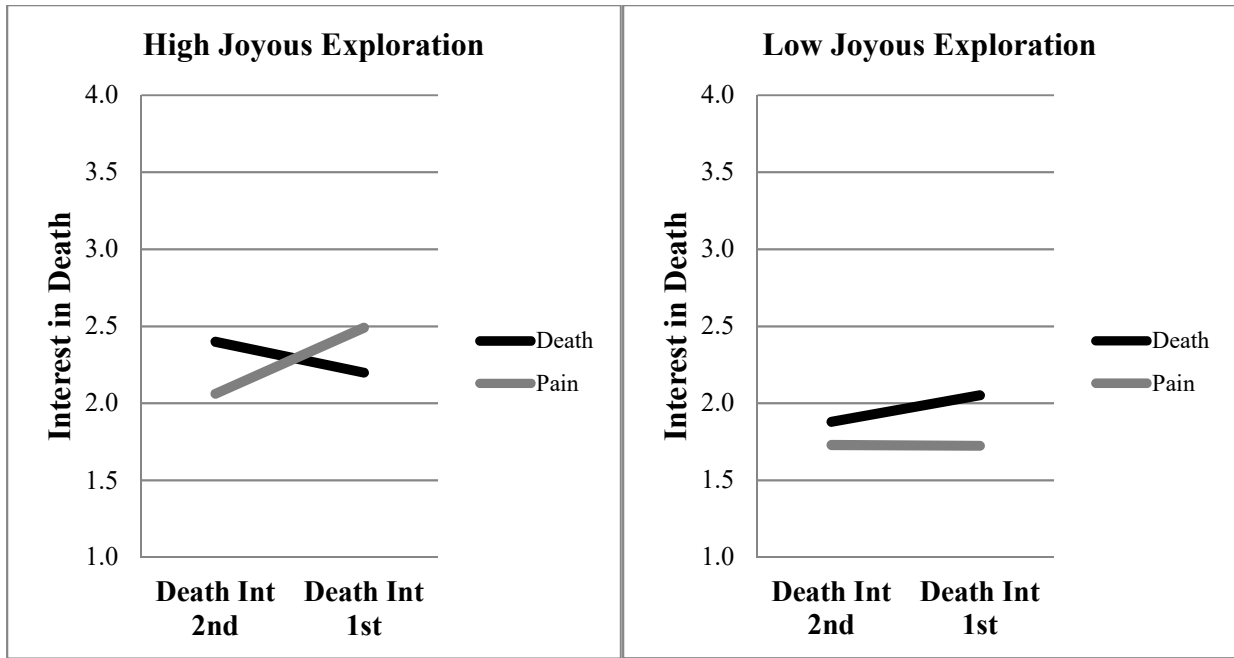


Figure 6. Joyous exploration x mortality salience x interest presentation order predicting interest in death.

Table 1. Means, standard deviations, and bivariate correlations between measured variables in Study 1

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. General Openness	4.86	1.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Experiential Open	3.65	0.69	0.56**	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Intellectual Open	3.64	0.68	0.57**	0.47**	-	-	-	-	-	-	-	-	-	-	-	-
4. C-Joyous Exploration	5.15	1.25	0.46**	0.44**	0.57**	-	-	-	-	-	-	-	-	-	-	-
5. C-Dep Sensitivity	4.71	1.34	0.09	0.24**	0.11*	0.50**	-	-	-	-	-	-	-	-	-	-
6. C-Stress Tolerance	3.99	1.56	-0.42**	-0.24**	-0.57**	-0.19**	0.33**	-	-	-	-	-	-	-	-	-
7. C-Thrill Seeking	3.89	1.55	0.06	-0.02	-0.02	0.40**	0.41**	0.16**	-	-	-	-	-	-	-	-
8. C-Social Curiosity	4.79	1.27	0.06	0.20**	0.06	0.41**	0.42**	0.28**	0.44**	-	-	-	-	-	-	-
9. Positive Affect	2.94	1.00	0.04	-0.01	0.12*	0.36**	0.21**	0.06	0.48**	0.26**	-	-	-	-	-	-
10. Negative Affect	1.97	1.08	-0.37**	-0.29**	-0.45**	-0.09	0.21**	0.52**	0.43**	0.20**	0.28**	-	-	-	-	-
11. Fear Affect	2.01	1.20	-0.35**	-0.27**	-0.39**	-0.09	0.21**	0.47**	0.34**	0.17**	0.22**	0.88**	-	-	-	-
12. Interest Affect	2.79	1.15	0.02	0.09	0.12*	0.32**	0.20**	0.06	0.39**	0.24**	0.79**	0.27**	0.20**	-	-	-
13. State Interest	2.43	0.81	0.08	0.21**	0.17**	0.41**	0.29**	0.06	0.41**	0.32**	0.57**	0.34**	0.32**	0.62**	-	-
14. Interest in Death	2.06	0.90	-0.09	-0.03	-0.07	0.23**	0.24**	0.22**	0.38**	0.29**	0.37**	0.49**	0.46**	0.36**	0.60**	-

Note. * = $p < .05$, ** = $p < .01$.

Discussion

Results from Study 1 did not support Hypothesis 1. High openness individuals did not become more interested following a mortality salience induction (relative to a control), when a validated and more extensive (than in Boyd et al., 2017) measure of state interest was used. However, when affect (positive, negative and fear-related) and religiosity (and spirituality) were controlled for, there was a trending interaction between general openness and mortality salience ($p = .082$), where low openness individuals were becoming less interested following mortality salience (relative to the control) ($p = .043$), providing partial support for Hypothesis 1. But critically, high openness individuals were not increasing their state interest even after controlling for these factors. Additionally, Hypothesis 2 was not supported. Individuals high in openness were not becoming more interested in death following mortality salience, nor were low openness individuals become less interested in death. These results indicate that the interest spurred on by mortality salience also does not extend to an interest in death, at least when general openness was used as predictor of interest in death.

The experiential aspect of openness was found to be a significant predictor of both state interest and interest in death following mortality salience, but only when interest presentation order was taken into account as a third variable interacting with mortality salience and experiential openness. Specifically, high experiential openness individuals exhibited decreased levels of state interest following mortality salience (relative to a control), but only when the state interest measure immediately followed the interest in death measure. This indicates that dosing these individuals with multiple reminders of death in sequence can inadvertently undermine interest. That is, the interest in death measure presumably functioned as an additional dose of mortality salience when it was administered prior to the state interest measure. These results run

counter to past research (Boyd et al., 2017) demonstrating that an encounter with death – albeit single encounter – can facilitate interest for high openness individuals. But it also extends that research by demonstrating how multiple death reminders can undermine interest, and specifically for those high in experiential openness.

With respect to high experiential openness individuals' interest in death, mortality salience (relative to the control) actually functioned to increase interest in death, but only when the interest in death measure was administered following the state interest measure (i.e., after a longer delay). The state interest measure may not have been an entirely neutral delay and it is difficult to disentangle whether the interest items preceding the interest in death measure influenced subsequent responses on the interest in death measure.²⁰ However, these results provide the first evidence that some individuals (i.e., those high in experiential openness) can indeed become interested in death after engaging with it. This increased interest in death, however, comes with a caveat: the willingness of high experiential openness individuals to report being more interested in death depends on if another delay, in addition to the PANAS-X (in this case a measure of state interest), has occurred following mortality salience. That is, high experiential openness individuals may need to sit with death a bit longer without any additional explicit death reminders before they are able to report being interested in it.

Study 1 also provided the first evidence that certain facets of curiosity (e.g., joyous exploration), may also play a role in how state interest and interest in death occur following mortality salience. High joyous exploration individuals demonstrated increased levels of state interest following mortality salience (relative to the control) when state interest was administered

²⁰ An exploratory analysis was conducted to determine if state interest significantly mediated one's interest in death within the condition where state interest was presented first for high experiential openness individuals (Model 7; PROCESS). Results indicated that state interest did not mediate the effects of mortality salience on interest in death for high experiential openness individuals, mean estimate = 0.18, Boot SE = 0.12, CI = [-0.06, 0.42].

prior to the interest in death measure. But, when the state interest measure was administered after the interest in death measure, state interest decreased, similar to what was occurring for high experiential openness individuals. Joyous exploration relates to how an individual derives enjoyment from engaging with situations or topics they find pleasurable. When examining each of the five items that comprise this measure, these “pleasurable” topics or situations are framed as things that are novel, challenging, and difficult. Therefore, it may not be surprising that a topic like death facilitates interest for individuals who seek out challenging and difficult topics. But again, when these individuals were administered multiple death reminders prior to the measure of state interest, interest was diminished. Examining joyous exploration in Studies 2-3 will help determine the generalizability these results.

Because the results utilizing experiential openness (and joyous exploration) as a moderator of effects were not predicted *a priori*, more research needs to be conducted to provide additional support for these effects. At the same time, these results set the stage for the idea that different aspects of openness do indeed play a role in cultivating interest following death reminders. Studies 2-3 will further examine the predictive value of each of these two aspects of openness.

STUDY 2

Although high openness individuals did not become more interested in death or generally interested following mortality salience (only high experiential openness individuals became more interested in death), it still follows that mortality salience may increase their interest in aesthetics and ideas. To examine this, openness was again measured, mortality salience was manipulated, and interest in aesthetic experiences and intellectual content was measured. Individuals high in openness were expected to become more interested in both aesthetic experiences and intellectual content following a mortality salience manipulation, relative to the dental pain group. Further, to distinguish how mortality salience motivates individuals who possess different types of openness to embrace their unique brand of openness, each aspect of openness (experiential and intellectual openness) was used to predict interest in aesthetic experiences and intellectual content. Specifically, following mortality salience (relative the dental pain group), interest in aesthetic experiences (e.g., visual art) was expected to be moderated by the experiential aspect of openness, and interest in intellectual content (e.g., philosophical quotations) was expected to be moderated by the intellectual aspect of openness. Support for this prediction is drawn from research demonstrating the validity of experiential openness in predicting interest in aesthetic experiences, and intellectual openness in predicting interest in intellectual content (Fayn et al., 2015a; Fayn et al., 2015b).

Hypothesis 1. General openness was hypothesized to moderate the effects of mortality salience on interest in both aesthetic experiences (e.g., visual art) and intellectual content (e.g., philosophical quotations). Specifically, individuals high in general openness were expected to

become more interested in both aesthetic experiences and intellectual content in response to mortality salience (low openness individuals were hypothesized to decrease), relative to the dental pain group.

Hypothesis 2. Experiential openness (but not intellectual openness) was hypothesized to moderate the effects of mortality salience on interest in aesthetic experiences (e.g., visual art). Specifically, individuals high in the experiential openness were expected to become more interested in aesthetic experiences in response to mortality salience (low experiential openness individuals were hypothesized to decrease their interest in aesthetic experiences), relative to the dental pain group.

Hypothesis 3. Intellectual openness (but not experiential openness) was hypothesized to moderate the effects of mortality salience on interest in intellectual content (e.g., philosophical content). Specifically, individuals high in intellectual openness were expected to become more interested in intellectual content in response to mortality salience (low intellectual openness individuals were hypothesized to decrease their interest in intellectual content), relative to the dental pain group.

Method

Participants

Participants were recruited on Amazon mTurk once again, and paid \$0.55 for their participation, given the increased length of Study 2. The same criteria used in the first study to conduct a power analysis was used again, except the total number of predictors was increased from three in the first study, to five. It was determined that 348 participants would be needed to detect the predicted interactions. Four hundred forty-five participants were recruited, and after excluding individuals who did not pass the attention check, a final sample of 339 participants

were analyzed (158 female, 174 male, 2 transgender male, 2 genderqueer, 1 “rather not say,” 1 “none apply to me,” and 1 who did not report; $M_{age} = 37.06$). The ethnic breakdown consisted of 7.4% Asian/Pacific Islander, 7.4% Black/African American, 3.3% Hispanic/Latino, 3.8% Native American, 75.7% White/Caucasian, 1.5% Multi-Racial, and 0.9% “other.”

Procedure

After agreeing to a waiver of consent for an experiment titled “Personality and Attitudes” participants filled out the same openness and curiosity measures as in Study 1 (BFAS, DeYoung et al., 2007; 5DC, Kashdan et al., 2018; TIPI, Gosling et al., 2003), and mortality salience was manipulated in the same manner. The same 66-item affective measure was then administered followed by two different six-item sets of stimuli measuring one’s interest in visual art and philosophical quotations (12 total), which were presented in a completely random order, as in past research (Fayn et al., 2017). Then an aesthetic fluency scale was administered to control for familiarity with the arts (Smith & Smith, 2006). Finally, participants completed the same demographics section used in Study 1.

Materials

Aspect Level Openness. For description of measures see Study 1. Both scales again exhibited good reliability ($\alpha > 0.80$).

Trait Curiosity. For description of measures see Study 1. All facet scales exhibited good reliability ($\alpha > 0.87$).

General Openness. See measure described in Study 1.

Mortality Salience. See measure described in Study 1.

PANAS-X. For description of measures see Study 1. All affect subscales again exhibited good reliability ($\alpha > 0.80$).

Interest in Aesthetic Experiences and Intellectual Content. To measure the degree to which high openness individuals were interested in domains related to their openness following mortality salience, participants were presented with six pieces of visual art and six philosophical quotations (Appendix H). The items were presented in a random order, with no more than two consecutive pieces of stimuli presented from each category. Participants were asked to rate each piece of visual art or philosophical quotation on a bipolar scale (as in Fayn et al., 2017) and indicated how *Interesting-Boring* they were on a 1-7 scale (*not at all to very much*) (reverse coded). They were also asked to rate each stimulus on two other bipolar dimensions from 1-7 (*Hard to Understand-Easy to Understand, Comprehensible-Incomprehensible*) (Silvia, 2005). Nine total scores were calculated: 3 bipolar dimension scores averaged across both the 6 visual art stimuli *and* the 6 philosophical quotations (i.e., interest, understanding, and comprehension), 3 bipolar dimension scores averaged across *only* the 6 visual art stimuli, and 3 bipolar dimension scores averaged across *only* the 6 philosophical quotations. The 12-item *Interesting-Boring* composite for both visual art *and* philosophical quotations was used to inform Hypothesis 1, the 6-item *Interesting-Boring* composite for *only* visual art was used to inform Hypothesis 2, and the 6-item *Interesting-Boring* composite for *only* philosophical quotations was used to inform Hypothesis 3. Each of these three scales exhibited good reliabilities ($\alpha > 0.81$).

Aesthetic Fluency Scale. To control for familiarity with the arts, participants were given a 10-item aesthetic fluency scale (Smith & Smith, 2006; Appendix I) that measured expertise and familiarity with the arts (see Fayn et al., 2017). Participants were instructed to report how much they knew about various artists (e.g., Mary Cassatt and Alessandro Boticelli) and art ideas (e.g., abstract expressionism and impressionism) on a 1-5 scale (*I have never heard of this artist or term to I can talk intelligently about this artist or idea in art*). This scale exhibited excellent

reliability ($\alpha = 0.94$). One additional item was included near the end of the scale as an attention check (e.g., “For this item, please select the I have never heard of this artist or term response”). Any participant not answering the attention check item correctly was excluded from analyses.

Demographics. See measure described in Study 1.

Results

Hypotheses 1: Openness x Mortality Salience Predicting Overall Interest in Aesthetic Experiences and Intellectual Content

To determine if general openness ($M = 4.95$, $SD = 1.20$, skewness = -0.16) moderated overall interest in both aesthetic experiences and intellectual content (combined 12-item interest measure: $M = 4.90$, $SD = 1.18$, skewness = -0.61) following mortality salience (Hypothesis 1), a regression analysis was performed using PROCESS (Model 1, Hayes 2018). For overall interest in aesthetic experiences and intellectual content, general openness predicted such interest, $b = 0.18$, $SE = 0.05$, $t(335) = 3.32$, $p = .001$, $CI = [0.07, 0.28]$, but mortality salience did not (control=0, death=1), $b = 0.17$, $SE = 0.13$, $t(335) = 1.37$, $p = .171$, $CI = [-0.08, 0.42]$. As seen in Figure 7, the general openness x mortality salience interaction was not significant, $b = -0.02$, $SE = 0.11$, $t(335) = -0.22$, $p = .825$, $CI = [-0.23, 0.19]$, indicating that general openness did not moderate interest in aesthetic experiences and intellectual content following mortality salience. Conducting the same analysis after controlling for positive affect ($p = .871$), negative affect ($p < .001$), fear-related affect ($p = .001$), religiosity ($p = .963$), spirituality ($p = .162$), and aesthetic fluency (i.e., expertise with the arts; $p = .005$), did not meaningfully change the overall interaction ($p = .982$).

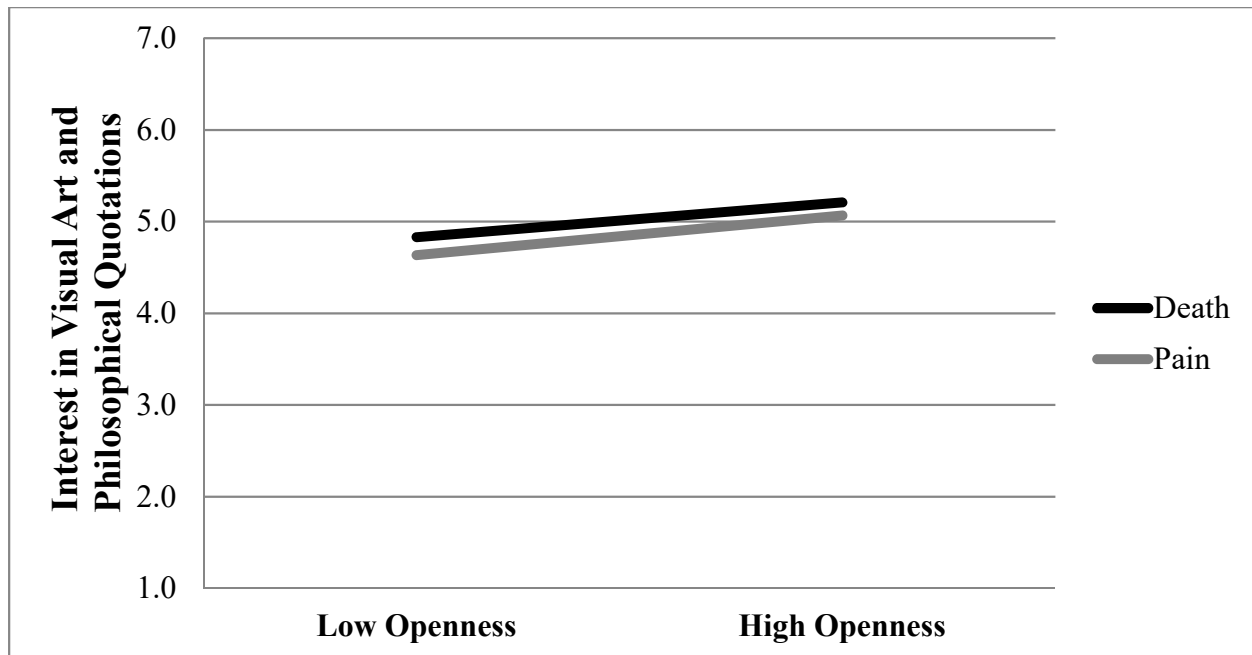


Figure 7. Openness x mortality salience predicting interest in aesthetic experiences and intellectual content.

Hypothesis 2: Experiential Openness x Mortality Salience Predicting Interest in Aesthetic Experiences

To determine if experiential openness ($M = 3.67$, $SD = 0.67$, skewness = -0.24) moderated interest in aesthetic experiences (6-item interest composite: $M = 5.20$, $SD = 1.28$, skewness = -0.85) following mortality salience after controlling for intellectual openness ($M = 3.66$, $SD = 0.64$, skewness = -0.20) and its interaction with mortality salience (Hypothesis 2), a regression analysis was performed using PROCESS (Model 2, Hayes 2018).²¹ Experiential openness significantly predicted interest in aesthetic experiences, $b = 0.59$, $SE = 0.11$, $t(333) = 5.30$, $p < .001$, $CI = [0.37, 0.80]$, and so did mortality salience (control=0, death=1), $b = 0.27$, SE

²¹ In Studies 1 and 3, when each aspect of openness was examined as a moderator of effects, the effect of the other aspect of openness was controlled for. Additional participants were recruited for Study 2 to attain enough power to examine the moderating effect of one aspect of openness while controlling for the effect of the other *as well as* the interaction between this control variable and the mortality salience prompt. This was done in an effort to further isolate the effects of each aspect of openness, given the rationale that mortality salience may uniquely activate interest in domains specific to each aspect of openness (i.e., interact with each aspect).

= 0.13, $t(333) = 2.03$, $p = .043$, $CI = [0.01, 0.53]$, but intellectual openness did not, $b = 0.04$, $SE = 0.12$, $t(333) = 0.38$, $p = .706$, $CI = [-0.19, 0.27]$. The experiential openness x mortality salience interaction was not significant, $b = 0.29$, $SE = 0.22$, $t(333) = 1.32$, $p = .187$, $CI = [-0.14, 0.73]$. However, because conditional effects were predicted for those high in experiential openness, conditional effects of mortality salience at low/high levels of experiential openness were examined. For high experiential openness individuals (at average levels of intellectual openness), there was a significant conditional effect of mortality salience, $b = 0.51$, $SE = 0.21$, $t(333) = 2.39$, $p = .017$, $CI = [0.09, 0.93]$, whereby mortality salience increased interest in aesthetic experiences (visual art), relative to the control. The conditional effect for low experiential openness individuals was not significant ($p = .600$).

Unexpectedly, as seen in Figure 8, the intellectual openness x mortality salience interaction was significant, $b = -0.50$, $SE = 0.23$, $t(333) = -2.14$, $p = .033$, $CI = [-0.96, -0.04]$. To probe the significant intellectual openness x mortality interaction, conditional effects for low and high intellectual openness individuals were examined at average levels of experiential openness. Specifically, low intellectual openness individuals exhibited increased interest in aesthetic experiences following mortality salience, relative to the control, $b = 0.53$, $SE = 0.18$, $t(333) = 2.91$, $p = .004$, $CI = [0.17, 0.88]$, but high intellectual openness individuals did not ($p = .613$).

Conducting the same analysis after controlling for positive affect ($p = .663$), negative affect ($p < .001$), fear-related affect ($p = .019$), religiosity ($p = .454$), spirituality ($p = .743$), and aesthetic fluency ($p = .090$), the overall interaction between intellectual openness and mortality salience did not meaningfully change ($p = .037$). Furthermore, the interaction between experiential openness and mortality salience did not meaningfully change after taking the aforementioned covariates into account ($p = .184$).

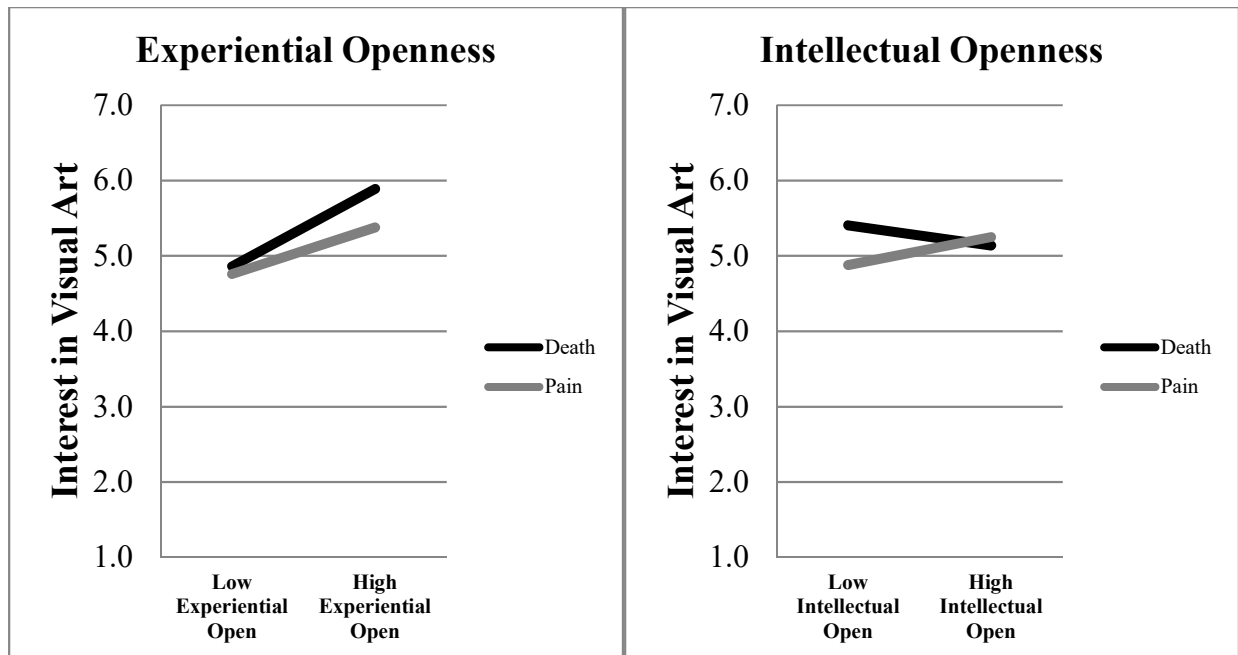


Figure 8. Experiential openness x mortality salience predicting interest in aesthetic experiences.

To examine if any of the three curiosity dimensions measured, interacted with mortality salience to predict interest in art, three separate Model 1 analyses were run while controlling for experiential openness and intellectual openness. Neither joyous exploration nor thrill seeking interacted with mortality salience to predict interest in visual art ($ps > .213$). The stress tolerance x mortality salience interaction was trending but still not significant ($p = .109$).

Hypothesis 3: Intellectual Openness x Mortality Salience Predicting Interest in Intellectual Content

To determine if intellectual openness moderated interest in intellectual content (6-item interest composite: $M = 4.60$, $SD = 1.37$, skewness = -0.36) following mortality salience after controlling for experiential openness and its interaction with mortality salience (Hypothesis 3), Model 2 was used again. Experiential openness significantly predicted interest in intellectual content, $b = 0.41$, $SE = 0.12$, $t(333) = 3.28$, $p = .001$, $CI = [0.16, 0.65]$, but intellectual openness did not, $b = 0.02$, $SE = 0.13$, $t(333) = 0.19$, $p = .852$, $CI = [-0.23, 0.28]$, nor did mortality salience

(control=0, death=1), $b = 0.07$, $SE = 0.15$, $t(333) = 0.50$, $p = .618$, $CI = [-0.22, 0.36]$.

Additionally, as seen in Figure 9, the interaction between intellectual openness and mortality salience was not significant, $b = -0.14$, $SE = 0.26$, $t(333) = -0.55$, $p = .585$, $CI = [-0.66, 0.37]$, nor was the interaction between experiential openness and mortality salience, $b = 0.0001$, $SE = 0.25$, $t(333) = 0.0002$, $p = .999$, $CI = [-0.49, -0.49]$. Conducting the same analysis after controlling for positive affect ($p = .050$), negative affect ($p < .001$), fear-related affect ($p < .001$), religiosity ($p = .568$), and spirituality ($p = .441$), neither the interaction between intellectual openness and mortality salience ($p = .469$), nor the interaction between experiential openness and mortality salience meaningfully changed ($p = .781$).

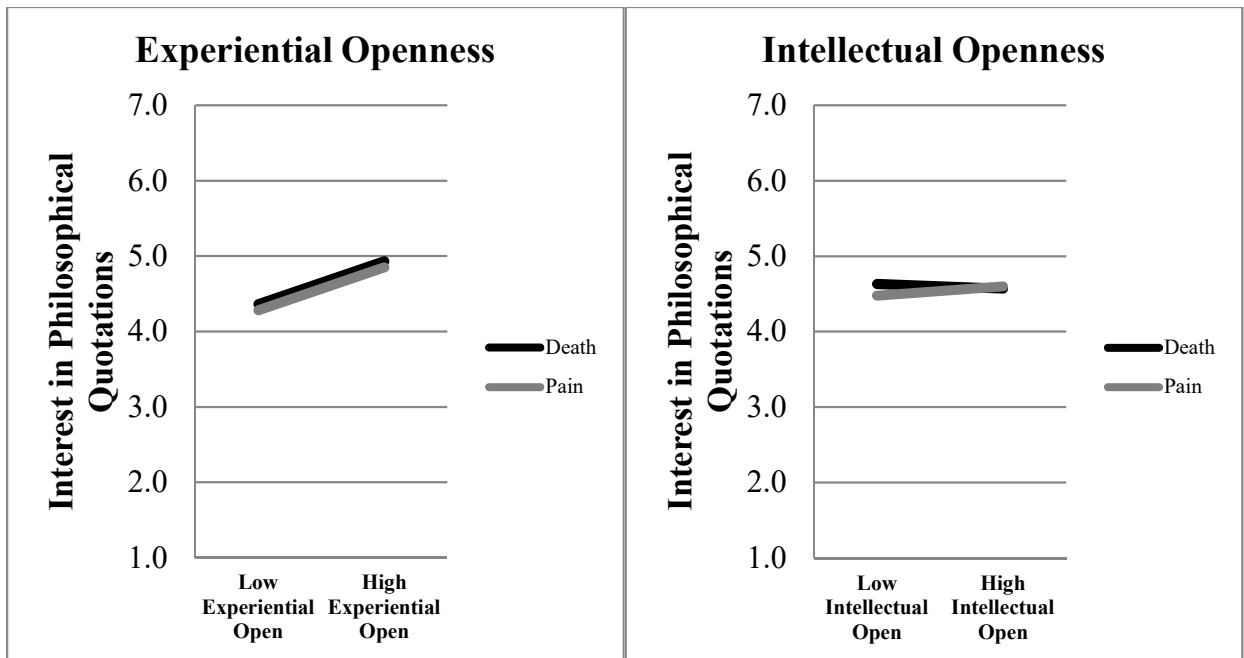


Figure 9. Intellectual openness x mortality salience predicting interest in intellectual content.

Exploratory Analyses: Facets of Curiosity

To examine if any of the three curiosity dimensions interacted with mortality salience to predict interest in philosophy, the same three Model 1 analyses were again run, while controlling

for experiential openness and intellectual openness. None of the three curiosity dimensions significantly interacted with mortality salience to predict interest in philosophical quotations (p s > .340).

Table 2. Means, standard deviations, and bivariate correlations between measured variables in Study 2

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. General Openness	4.94	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Experiential Open	3.67	0.67	0.55**	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Intellectual Open	3.66	0.64	0.48**	0.46**	-	-	-	-	-	-	-	-	-	-	-	-
4. C-Joyous Exploration	5.35	1.14	0.37**	0.37**	0.52**	-	-	-	-	-	-	-	-	-	-	-
5. C-Stress Tolerance	3.86	1.67	-0.48**	-0.28**	-0.55**	-0.21**	-	-	-	-	-	-	-	-	-	-
6. C-Thrill Seeking	3.97	1.49	-0.03	-0.06	-0.08	0.44**	0.19**	-	-	-	-	-	-	-	-	-
7. Positive Affect	2.86	0.96	-0.08	-0.11*	0.04	0.37**	0.13*	0.54**	-	-	-	-	-	-	-	-
8. Negative Affect	1.93	1.14	-0.33**	-0.21**	-0.31**	0.07	0.53**	0.47**	0.35**	-	-	-	-	-	-	-
9. Fear Affect	1.94	1.21	-0.26**	-0.18*	-0.23**	0.12*	0.47**	0.41**	0.31**	0.91**	-	-	-	-	-	-
10. Interest Affect	2.72	1.08	-0.05	0.04	0.02	0.33**	0.13*	0.48**	0.73**	0.39**	0.32**	-	-	-	-	-
11. Overall Interest	4.90	1.18	0.18**	0.29**	0.14**	0.25**	0.001	0.03	0.04	-0.09	0.01	0.05	-	-	-	-
12. Art Interest	5.20	1.28	0.19**	0.31**	0.16**	0.18**	-0.04	-0.07	-0.06	-0.18**	-0.11	-0.04	0.88**	-	-	-
13. Philosophy Interest	4.60	1.37	0.13*	0.20**	0.10	0.26**	0.04	0.12*	0.13*	0.02	0.11*	0.12*	0.90**	0.59**	-	-
14. Aesthetic Fluency	2.30	1.02	-0.08	-0.01	-0.07	0.22**	0.30**	0.46**	0.45**	0.60**	0.57**	0.46**	0.12*	0.01	0.19**	-

Note. * = $p < .05$, ** = $p < .01$.

Discussion

Hypothesis 1 for Study 2 was not supported. General openness did not interact with mortality salience to predict interest in aesthetic experiences (e.g., visual art) and intellectual content (e.g., philosophical quotations). There was a positive effect of general openness on overall interest in aesthetic experiences and intellectual content, as expected, but mortality salience did not exacerbate such interest for high openness individuals. Examination of the two aspects of openness (i.e., experiential and intellectual openness) separately predicting interest in aesthetic experiences and intellectual content yielded some unanticipated results, particularly with respect to Hypothesis 2. I predicted that experiential openness would moderate the effect of mortality salience on interest in aesthetic experiences after controlling for intellectual openness and its interaction with mortality salience, whereby those high in experiential openness would exhibit increased interest following mortality salience. While this conditional effect was found to be significant ($p = .017$), the overall interaction between experiential openness and mortality salience was not ($p = .187$), indicating that experiential openness did not moderate the effect of mortality salience on interest in aesthetic experiences. There was, however, a positive effect of experiential openness on interest in aesthetic experiences, replicating past research (Fayn et al., 2015a). Unexpectedly, it was intellectual openness that moderated the effect of mortality salience on interest in aesthetic experiences. Furthermore, it was low intellectual openness individuals who exhibited increased interest in aesthetic experiences following a death reminder.

These unexpected results may have occurred for a number of reasons. Low intellectual openness individuals may chronically feel like they lack the ability to understand and interpret aesthetic content like visual art, and a mortality reminder may activate a compensatory response

causing them to *say* that they are more interested in visual art.²² That is, mortality salience might be causing them to conceal their intellectual deficiencies in order to make themselves feel good, in the moment. However, one might expect that such a front may not be very substantial or long-lasting for those low in intellectual openness. As such, measuring additional behavioral responses associated with an interest in visual art (e.g., willingness to visit a museum or discuss art with another individual) may help establish if such effects are quickly extinguished or not. However, these results indicate that intellectual openness may be an important factor to consider when it comes to predicting interest in aesthetic experiences following death reminders, but not experiential openness.

Hypothesis 3 also was not supported. Intellectual openness did not moderate the effect of mortality salience on interest in intellectual content (e.g., philosophical quotations) after controlling for experiential openness and its interaction with mortality salience, nor did intellectual openness predict interest in intellectual content. Experiential openness did not moderate the effect of mortality salience on interest in intellectual content either, even though there was a positive effect of experiential openness on interest in intellectual content.

Together these results indicate that mortality salience does not activate an interest in those things in life that correspond with one's particular brand of openness. Even though experiential openness did not significantly moderate the effect of mortality salience on interest in aesthetic experiences, descriptively, those high in experiential openness became more interested

²² Interestingly, the overall interaction between intellectual openness and mortality salience on comprehension of visual art was significant ($p = .043$) after controlling for experiential openness and its interaction with mortality salience, whereby low intellect individuals reported comprehending visual art better following mortality salience relative to the control ($p = .002$). There were no significant effects for understanding of visual art as a product of either aspect of openness and mortality salience, nor were there for understanding or comprehension of philosophical quotations. Effects for comprehension and understanding are not reported on further in light of the fact that they were included for exploratory purposes and they did not mediate any effects on interest in visual art or philosophical quotations.

in aesthetic experiences (e.g., visual art) following mortality salience. Unexpectedly, intellectual openness moderated the effects of mortality salience on interest in aesthetic experiences, whereby those low in intellectual openness reported increased interest following mortality salience. Thus, there is at least some additional support for the idea that it is important to distinguish between the different aspects of openness in the context of death reminders. In an effort to continue to do just that, it follows that it may also be beneficial to examine what it is about death that can potentially cultivate interest for individuals high in experiential or intellectual openness.

STUDY 3

Little empirical research examining the interestingness of death has been conducted, which is somewhat surprising given that many researchers assert that death is naturally interesting (see Silvia, 2006, and Wade, Buxton, & Kelly, 1999 in reference to Shank, 1979). Study 3 utilized the two aspects of openness to examine why death may be so interesting. In addition to manipulating mortality salience in the usual fashion, two other mortality salience construals were included to highlight death's experiential or intellectual qualities. Interest was expected to be provoked in individuals valuing the qualities highlighted within each death construal.

Specifically, openness and its aspects were measured, and four levels of an open-ended mortality salience prompt were employed: (1) a conventional death prompt, (2) a death prompt oriented toward death's experiential qualities, (3) a death prompt oriented toward death's intellectual qualities, and (4) a dental pain comparison condition. State interest was then measured followed by a death anxiety questionnaire to examine if state interest ameliorated death anxiety, something that has remained unexamined. I hypothesized that highlighting the qualities of death that are intrinsically interesting to individuals possessing heightened levels of experiential openness would cause their state interest to increase (relative to the dental control), which would in turn decrease death anxiety. Furthermore, I hypothesized that highlighting the qualities of death that are relevant to individuals possessing heightened levels of intellectual openness would cause their state interest to increase (relative to the dental control), which would in turn decrease death anxiety.

Hypothesis 1a. Experiential openness was hypothesized to moderate state interest across conditions, and specifically, state interest was hypothesized to increase for high experiential openness individuals given the experiential death prompt construal (low experiential openness individuals were hypothesized to decrease their state interest), relative to the dental pain group. No other specific group comparisons were predicted for high or low experiential openness individuals.

Hypothesis 1b. Intellectual openness was hypothesized to moderate state interest across conditions, and specifically, state interest was hypothesized to increase for high intellectual openness individuals given the intellectual death prompt construal (low intellectual openness individuals were hypothesized to decrease their state interest), relative to the dental pain group. No other specific group comparisons were predicted for high or low intellectual openness individuals.

Hypothesis 2a. To the extent that individuals high in experiential openness became more interested following a mortality salience induction highlighting death's experiential qualities, relative to the dental pain group, death anxiety was hypothesized to decrease (i.e., interest was expected to mediate the relationship between the experiential death construal and death anxiety for those high in experiential openness).

Hypothesis 2b. To the extent that individuals high in intellectual openness became more interested following a mortality salience induction highlighting death's intellectual qualities, relative to the dental pain group, death anxiety was hypothesized to decrease (i.e., interest was expected to mediate the relationship between the intellectual death construal and death anxiety for those high in intellectual openness).

Method

Participants

Amazon mTurk was once again used to recruit participants, and they were paid \$0.45, as in Study 1. As in Study 1, a power analysis determined that 295 participants were required. Three hundred ninety-two participants were recruited, and after excluding individuals who did not pass an attention check, a final sample of 283 participants were analyzed (125 female, 155 male, 2 transgender female, and 1 who did not report; $M_{age} = 37.24$). The ethnic breakdown consisted of 4.3% Asian/Pacific Islander, 6.7% Black/African American, 5.0% Hispanic/Latino, 1.4% Native American, 81.2% White/Caucasian, and 1.4% Multi-Racial.

Procedure

After agreeing to a waiver of consent for an experiment titled “Personality and Attitudes,” participants completed the same openness and curiosity measures as in Studies 1-2. Mortality salience was then manipulated using an open-ended prompt asking participants to write about (1) death generally, (2) death’s experiential qualities, (3) death’s intellectual qualities, or (4) a dental pain comparison. The 66-item PANAS-X was then administered prior to the state measure of interest used in Study 1. Finally, the study concluded with a scale measuring death anxiety (Lester & Abdel-Khalek, 2003; Appendix J) and a demographics section.

Materials

Aspect Level Openness. For description of measures see Study 1. Both scales exhibited acceptable reliability ($\alpha > 0.76$).

Trait Curiosity. For description of measures see Study 1. All facet scales exhibited good reliability ($\alpha > 0.86$).

General Openness. See measure described in Study 1.

Mortality Salience. Participants were randomly assigned to one of four different groups (conventional death construal vs. experiential death construal vs. intellectual death construal vs. dental pain comparison; Appendix D). For the experiential death construal, participants were asked to, “please briefly describe, the EXPERIENCE OF DEATH,” and “jot down, as specifically as you can, what EXPERIENCING DEATH entails.” For the intellectual death construal, they were asked to, “please briefly describe, the IDEA OF DEATH,” and “jot down, as specifically as you can, what the CONCEPT OF DEATH entails.” The conventional death construal and dental pain comparison prompt were identical to those used in Studies 1 and 2.

Pilot Testing. To examine if death construals facilitated intellectual or experiential engagement with death, as intended, a pilot study was conducted. Two hundred twenty-seven participants from USF’s SONA system rated their intellectual and experiential engagement with the prompts. After completing the 20-item BFAS, participants were administered one of six open-ended response prompts that included either a dental pain control, the conventional death construal, an intellectual death construal (“Please briefly describe, the IDEA OF DEATH,” and “Jot down, as specifically as you can, what the CONCEPT OF DEATH entails”), an experiential death construal (“Please briefly describe, the EXPERIENCE OF DEATH,” and “Jot down, as specifically as you can, what EXPERIENCING DEATH entails”), an intellectual mortality salience *scenario*, or an experiential mortality salience *scenario*.^{23,24} The intellectual and

²³ Intellectual mortality salience scenario: “Imagine a scenario where you chose to be a participant in a discussion conducted by a team of world-renowned psychologists and philosophers regarding the topic of death. Now, imagine yourself in a room, about to engage in this discussion regarding the topic of death. There are no right or wrong answers, we would simply like to know as vividly as possible, what would hypothetically be discussed in this situation. Now, please take a moment to describe the idea of death.”

²⁴ Experiential mortality salience scenario: “Imagine a scenario where you chose to be a participant in a study conducted by a team of world-renowned medical doctors examining what it is like to experience death. Now, imagine yourself in a room, about to undergo a procedure that would allow you to experience death. There are no right or wrong answers, we would simply like to know as vividly as possible, what would hypothetically be experienced in this situation. Now, please take a moment to describe the experience of death.”

experiential death construals and scenarios were meant to facilitate participant engagement with the prompts in a manner that corresponded with each aspect of openness. After an initial exploratory analysis, it was determined that the intellectual ($n = 27$) and experiential ($n = 29$) *scenario* prompts were not differing from the conventional death prompt and therefore they were dropped for the remainder of the data collection. Then the PANAS-X was administered followed by an 8-item measure that asked participants to rate on a 1-5 scale (*not at all* to *very much so*) the “manner in which they thought about death while writing about it” (“as an abstract idea,” “as a concrete experience,” “in a philosophical manner,” “as something you can feel,” “intellectually,” “as a sensory process,” “academically,” and “in a perceptive manner”).^{25,26} After conducting an exploratory factor analysis using a varimax rotation, two factors were revealed after selecting factors with eigenvalues > 1.0 . Following the rotation, only those items with a factor loading ≥ 0.60 were kept (they also could not load onto the second factor by more than 0.25). Results indicated that “as an abstract idea,” “in a philosophical manner,” and “academically,” loaded onto the first factor (intellectual factor; $M = 2.65$, $SD = 1.02$, skew = 0.09), and “as a concrete experience,” “as something you can feel,” and “as a sensory process,” loaded onto the second factor (experiential factor; $M = 3.25$, $SD = 1.17$, skew = -0.18). “Intellectually” and “in a perceptive manner” were not included in either the intellectual or experiential factor because they did not meet the aforementioned inclusion criteria.

To determine if the intellectual death construal differed from the conventional death construal, as intended, an ANCOVA was run treating intellectual ($M = 3.51$, $SD = 0.64$, skew = -

²⁵ Three additional items were used for exploratory purposes at the end of this measure, but will not be reported on further: “as something happening to someone else,” “as something happening to me,” and “emotionally.” Similarly, a death-thought accessibility measure was administered at the end of the pilot, but will not be reported on.

²⁶ The dental pain control responses are not reported because an error was made in reference to the prompt. Specifically, participants were asked to respond back to this prompt assessing how they thought about “death” while writing about it, not “dental pain.” The ratings for this group were, however, included in the factor analysis.

0.09) and experiential openness ($M = 3.77$, $SD = 0.60$, skew = 0.03) as covariates and the intellectual composite factor as the dependent variable. As seen in Figure 10, results indicated that the intellectual death construal caused participants to think about death in a more intellectual manner ($M = 3.35$, $SD = 0.89$) compared to the conventional death construal condition ($M = 2.47$, $SD = 0.92$), $F(1, 83) = 22.83$, $p < .001$, $\eta^2_p = 0.22$.²⁷ The experiential death construal ($n = 44$) was not included in the analysis but its intellectual factor mean fell between the conventional and intellectual death construals ($M = 2.85$, $SD = 0.86$).

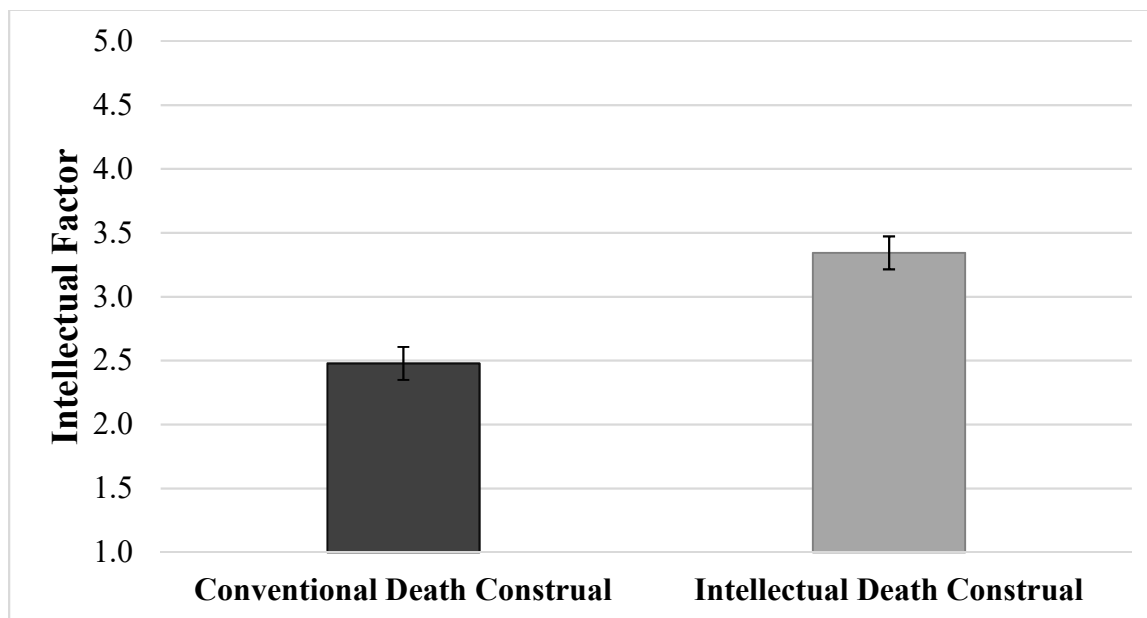


Figure 10. Intellectual factor comparison across conventional ($n = 43$) and intellectual ($n = 44$) death construal levels.

The same analysis was conducted to compare the experiential death construal with the conventional construal, but this time the experiential composite factor was the dependent variable. As seen in Figure 11, participants administered the experiential death construal reported

²⁷ Intellectual openness was a significant covariate in the analysis, $F(1, 83) = 6.17$, $p = .015$, $\eta^2_p = 0.07$, but experiential openness was not, $p = .281$. If covariates are not included in the analysis, the overall effect does not meaningfully change across the two conditions ($p < .001$).

thinking about death more experientially ($M = 3.18, SD = 1.06$) compared to the conventional death construal condition ($M = 2.76, SD = 1.20$), $F(1, 83) = 4.71, p = .033, \eta^2_p = 0.05$.²⁸ The intellectual death construal ($n = 44$) was not included in the analysis but its experiential factor mean fell between the conventional and experiential death construals ($M = 2.97, SD = 1.10$).

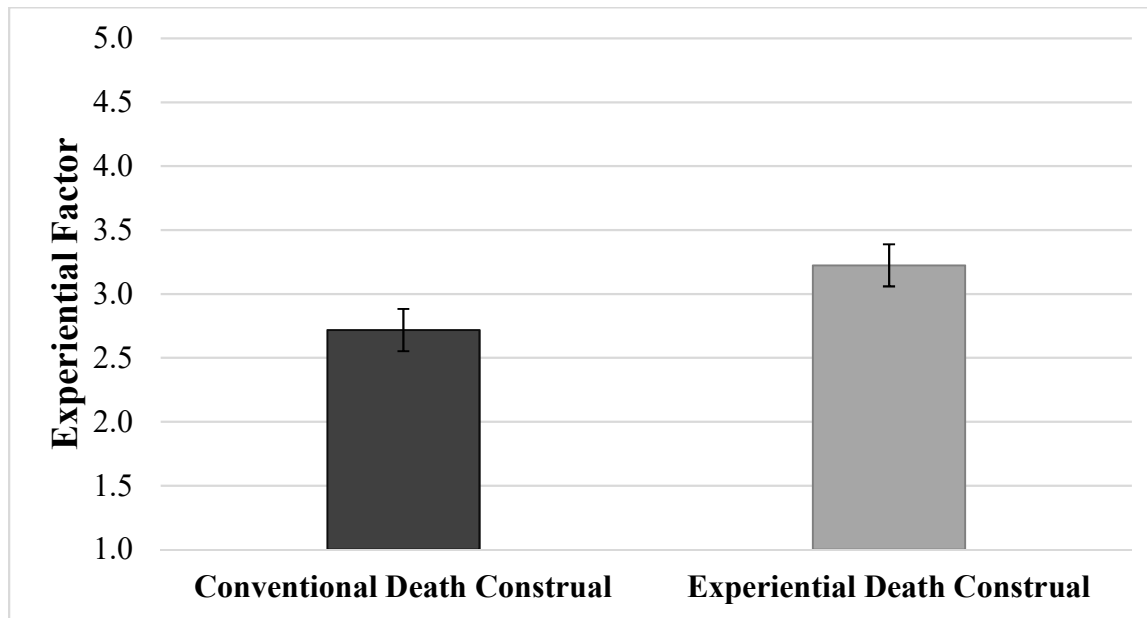


Figure 11. Experiential factor comparison across conventional ($n = 43$) and experiential ($n = 44$) death construal levels.

PANAS-X. For description of measures see Study 1. All affect subscales again exhibited good reliability ($\alpha > 0.84$).

State Interest. For description of measure see Study 1. The scale once again exhibited excellent reliability ($\alpha = 0.95$).

Death Anxiety Scale. A commonly used 14-item scale measuring how anxious one is about of death was administered to participants to determine if the manner in which death was

²⁸ Experiential openness was a significant covariate in the analysis, $F(1, 83) = 7.30, p = .008, \eta^2_p = 0.08$, but intellectual openness was not, $p = .548$. If covariates are not included in the analysis, the overall effect of condition is no longer significant ($p = .086$).

manipulated impacted how anxious they were about death on a 1-6 scale (*not at all disturbed or anxious to very disturbed or anxious*) (e.g., “missing out on so much after you die,” “never thinking or experiencing anything again,” and “the intellectual degeneration of old age”) (Lester & Abdel-Khalek, 2003; Appendix J). Scores were averaged across 14 items, with higher scores indicating more death anxiety. One additional item was included near the end of this scale as an attention check item (e.g., “For this item, please select the not at all disturbed or anxious response”). Individuals who did not answer the attention check item correctly were excluded from analyses. The scale exhibited excellent reliability ($\alpha = 0.94$).

Demographics. See measure described in Study 1.

Results

Hypothesis 1a: Experiential Openness x Mortality Salience Construals Predicting State Interest

To determine if experiential openness moderated state interest across different death construal conditions, and specifically, if high experiential openness individuals became more interested when death was construed in an experiential manner, a Model 1 analysis (PROCESS; Hayes, 2018) utilizing the multi-categorical function, while treating the dental pain group as the reference category, was conducted. Intellectual openness was also treated as a covariate the analysis. PROCESS automatically made three comparisons after dummy-coding (d1=dental pain vs. conventional death construal, d2=dental pain vs. intellectual death construal, d3=dental pain vs. experiential death construal). While examining the interaction between experiential openness and each of the three comparison groupings, all remaining comparison groupings and interactions were controlled for. Neither the effect of experiential openness, nor the effects of any of the comparison groupings were significant ($p > .173$). Intellectual openness was not a

significant covariate, although its effect was trending, $b = 0.13$, $SE = 0.08$, $t(274) = 1.76$, $p = .080$, $CI [-0.02, 0.29]$. As predicted and visualized in Figure 12, there was a significant interaction between experiential openness and the experiential death construal (relative to the dental pain condition after controlling for all other dummy-coded comparison groupings and interactions), $b = 0.61$, $SE = 0.23$, $t(274) = 2.60$, $p = .010$, $CI [0.15, 1.07]$. Experiential openness did not interact with the conventional or intellectual death construal in this analysis ($ps > .184$). The interaction between the dummy-coded comparison grouping for the experiential death construal (d3) was probed at high and low levels (84th and 16th percentiles). As predicted, high experiential openness individuals exhibited increased state interest after engaging with the experiential death construal, relative to the control condition, $b = 0.56$, $SE = 0.22$, $t(274) = 2.53$, $p = .012$, $CI [0.13, 1.00]$. There was no effect of the experiential death construal condition for low experiential openness individuals, however, the effects were descriptively in the opposite direction ($p = .232$).

After controlling for positive affect ($p < .001$), negative affect ($p = .252$), fear-related affect ($p = .210$), religiosity ($p = .837$), and spirituality ($p = .596$), the significant interaction between experiential openness and the experiential death construal (relative to dental pain) grouping was no longer significant ($p = .113$). The conditional effect for high experiential openness individuals was no longer significant either, however, it was trending and descriptively in the same direction, $b = 0.34$, $SE = 0.18$, $t(264) = 1.91$, $p = .057$, $CI [-0.01, 0.69]$.

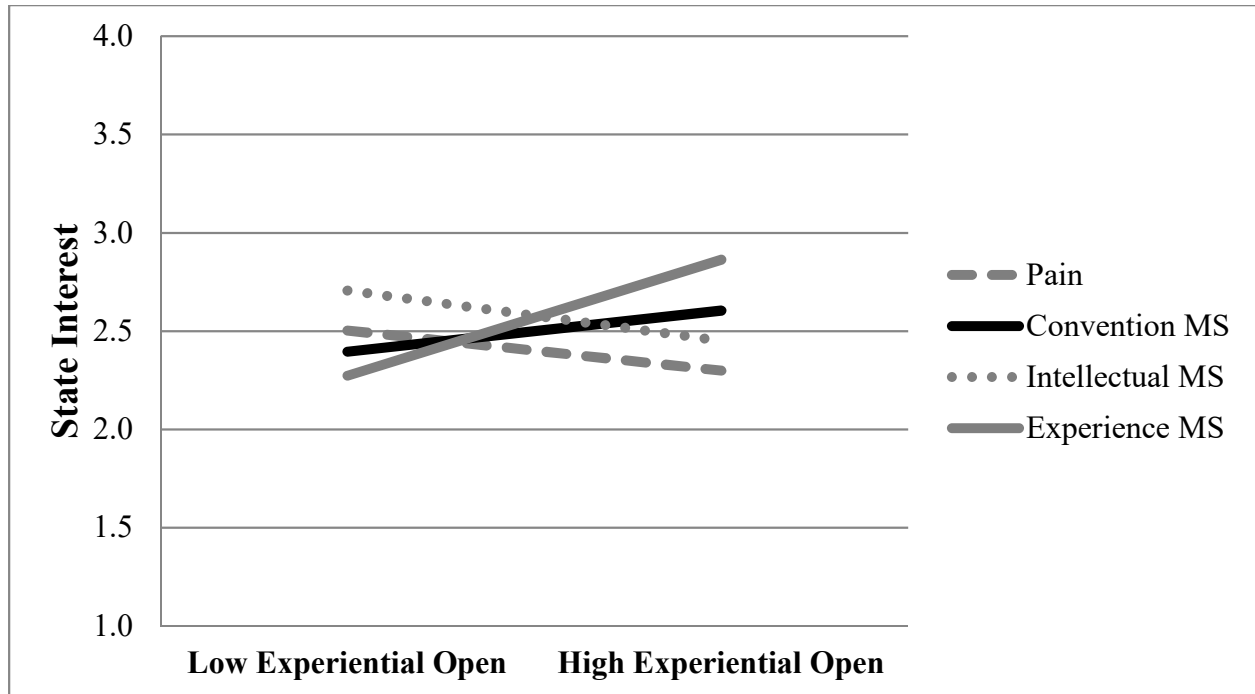


Figure 12. Experiential openness predicting state interest across death construal conditions.

Hypothesis 1b: Intellectual Openness x Mortality Salience Construals Predicting State Interest

To examine if intellectual openness interacted with mortality salience construal conditions in predicting state interest, the same analysis was conducted once more while replacing experiential openness with intellectual openness as the moderator, and intellectual openness with experiential openness as the covariate. As seen in Figure 13, intellectual openness was not found to significantly predict state interest ($p = .911$), nor were any of the three comparison groupings ($ps > .305$). Experiential openness was not a significant covariate in the analysis either ($p = .348$). Intellectual openness did not significantly interact with the intellectual death construal (relative to dental pain) comparison grouping ($p = .722$), nor did it interact with either of the other two comparison groupings ($ps > .216$).

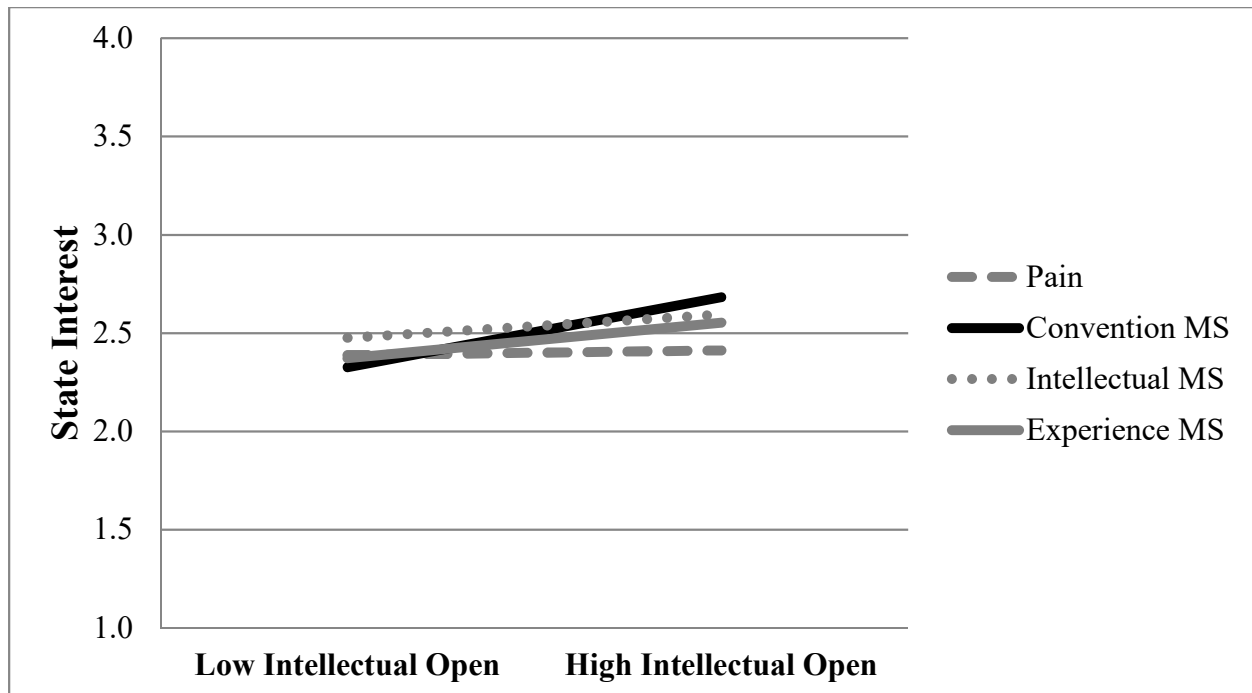


Figure 13. Intellectual openness predicting state interest across death construal conditions.

Even after controlling for positive affect ($p < .001$), negative affect ($p = .183$), fear-related affect ($p = .265$), religiosity ($p = .938$), and spirituality ($p = .676$), intellectual openness still did not interact with any of the three comparison groupings ($ps > .681$).

Hypothesis 2a-b: State Interest Mediating Relationship between Mortality Salience Construal and Death Anxiety

To test if the increased state interest exhibited by high experiential openness individuals following an experiential death construal attenuated death anxiety, PROCESS was used to conduct a moderated mediation analysis (Model 7; Hayes, 2018). The same dental pain reference group comparison groupings were used. Experiential openness was treated as the moderating variable and intellectual openness as a covariate, death construals were the independent variable, state interest was the mediating variable, and death anxiety was the dependent variable. There was a significant overall direct effect of state interest on death anxiety, $b = 0.30$, $SE = 0.10$,

$t(277) = 2.96, p = .003, CI [0.10, 0.49]$, indicating that overall, as state interest increased, death anxiety increased. The index of moderated mediation within the significant experiential death construal (relative to dental pain) was significant (Index of moderated mediation: mean estimate = 0.18, Boot SE = 0.10, CI = [0.02, 0.41]), indicating that the indirect effects of this comparison grouping on death anxiety, mediated by state interest, were moderated by experiential openness. Specifically, the indirect effect for high experiential openness individuals was significant, mean estimate = 0.17, Boot SE = 0.09, CI = [0.02, 0.37], indicating that as state interest increased after engaging with an experiential death construal (relative to dental pain), death anxiety subsequently *increased*, it did not decrease. No significant effects occurred for this comparison grouping for low experiential openness individuals (mean estimate = -0.07, Boot SE = 0.07, CI = [-0.23, 0.05]). Significant indirect effects for high experiential openness individuals were extinguished after including different types of affect and religiosity as covariates in the analysis. Path estimates and bootstrapped confidence intervals for all conditional indirect effects within the experiential death construal (relative to dental pain) condition are presented below in Figure 14.

A moderated mediation analysis using intellectual openness in place of experiential openness was not run due to the fact that intellectual openness was not found to moderate state interest across mortality salience construal levels.

High Experiential Openness

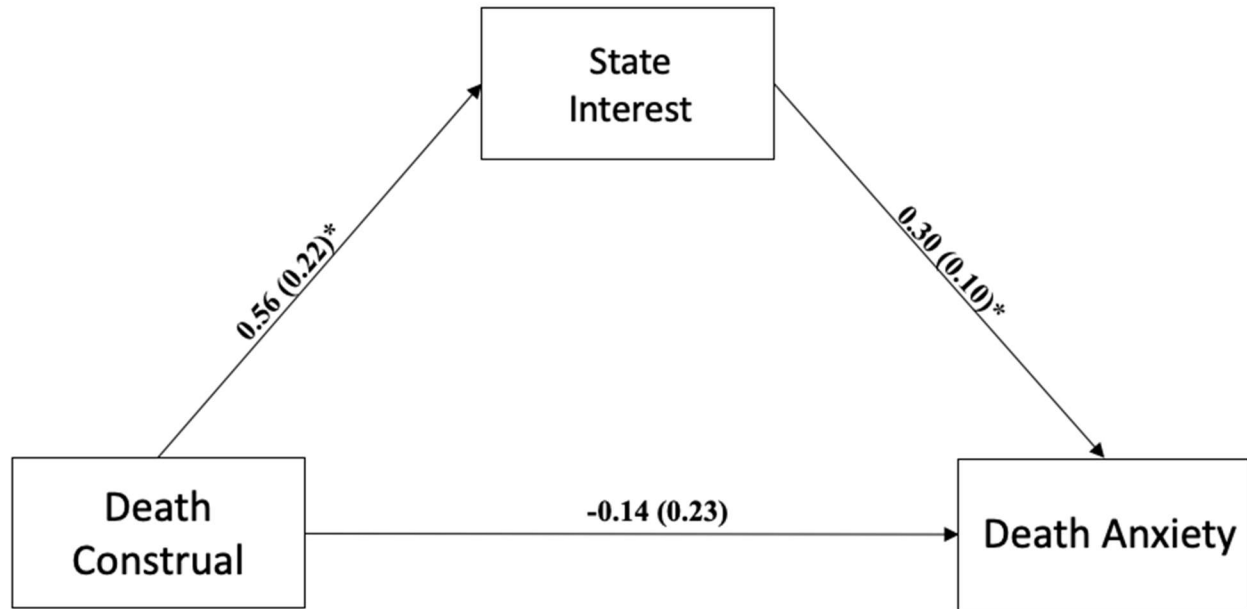


Figure 14. Effect of experiential death construal on death anxiety through state interest among high experiential openness individuals.

Note. Conditional indirect effects are significant (*) when the confidence interval (CI) does not straddle zero.

Conditional Indirect Effect of Experiential Death Construal on Death Anxiety through State Interest at Low/Mid/High Levels of Experiential Openness:

Low experiential openness: mean estimate = -0.07, SE = 0.07, CI = -0.23, 0.05

Mid experiential openness: mean estimate = 0.04, SE = 0.05, CI = -0.05, 0.14

High experiential openness: mean estimate = **0.17**, SE = **0.09**, CI = **0.02, 0.37***

Exploratory Analyses: Facets of Curiosity

To determine if any of the three facets of curiosity (e.g., joyous exploration, stress tolerance, and thrill seeking) predicted state interest depending on the type of death construal, three additional Model 1 analyses were conducted treating each facet of curiosity as the moderating variable, the death construal prompt as a multicategorical variable as before, and

state interest as the dependent variable, while controlling for the individual effects of experiential and intellectual openness. Neither joyous exploration ($M = 5.25$, $SD = 1.18$) nor stress tolerance ($M = 3.83$, $SD = 1.51$) significantly interacted with any of the death construal comparison groupings in predicting state interest ($ps > .239$). However, thrill seeking ($M = 3.99$, $SD = 1.41$) did significantly interact with the intellectual death construal (relative to the dental pain condition), $b = -0.21$, $SE = 0.08$, $t(273) = -2.56$, $p = .011$, $CI [-0.36, -0.48]$, after controlling for experiential openness ($p = .152$) and intellectual openness ($p = .061$). The interaction was probed and as can be seen in Figure 15, low thrill seeking individuals were found to exhibit increased state interest after engaging with the intellectual death construal, relative to the control condition, $b = 0.50$, $SE = 0.18$, $t(273) = 2.81$, $p = .005$, $CI [0.15, 0.84]$. Conditional effects for high thrill seeking individuals were not significant ($p = .336$).

To examine if the increased state interest occurring for low thrill seeking individuals engaging with an intellectual death construal prompt (relative to control condition) affected death anxiety, a moderated mediation analysis was conducted again. The index of moderated mediation within the significant intellectual death construal condition (relative to dental pain) was significant (Index of moderated mediation: mean estimate = -0.06, Boot SE = 0.03, $CI = [-0.14, -0.01]$), indicating that the indirect effects of this comparison grouping on death anxiety, mediated by state interest, was moderated by thrill seeking. As seen in Figure 16, the indirect effect for low thrill seeking individuals was significant, mean estimate = 0.15, Boot SE = 0.08, $CI = [0.02, 0.33]$, indicating that as state interest increased after engaging with an intellectual death construal (relative to dental pain), death anxiety subsequently increased for these individuals. No other

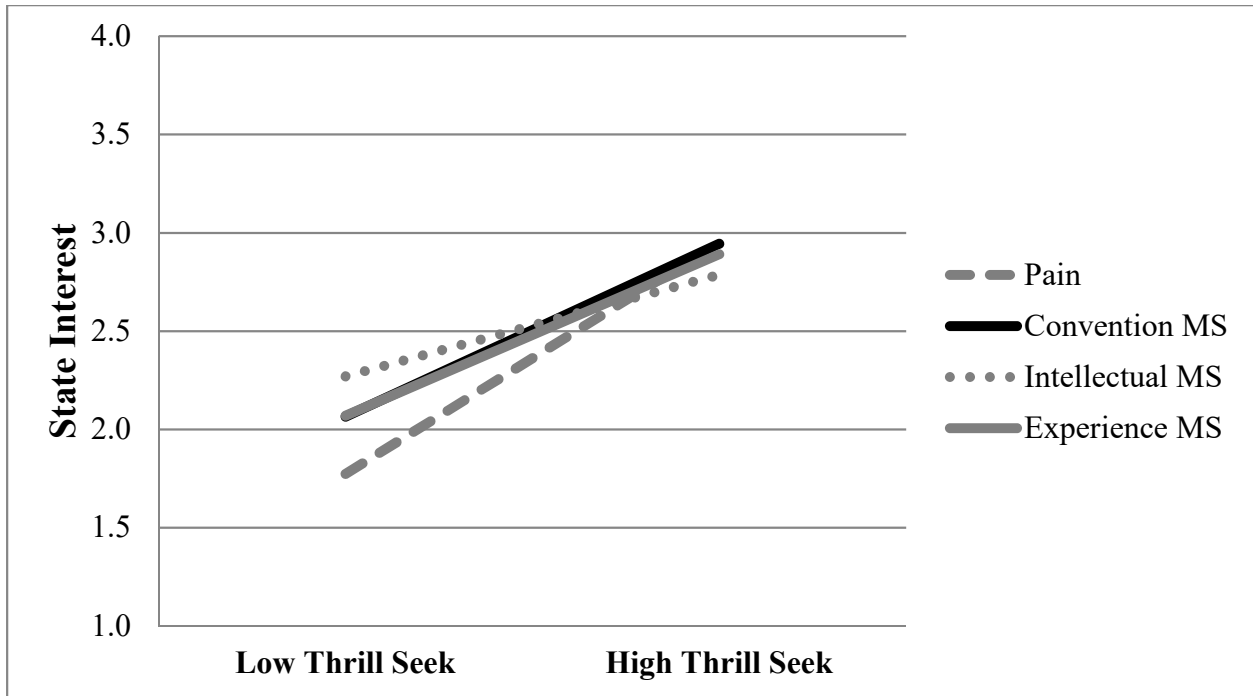


Figure 15. Thrill seeking predicting state interest across death construal conditions.

indirect conditional effects were significant. Including different types of affect and religiosity in these analyses extinguished these effects (both the conditional effects of the intellectual death construal prompt on state interest at different levels of thrill seeking, as well as the indirect conditional effect for low thrill seeking individuals).

Low Thrill Seeking

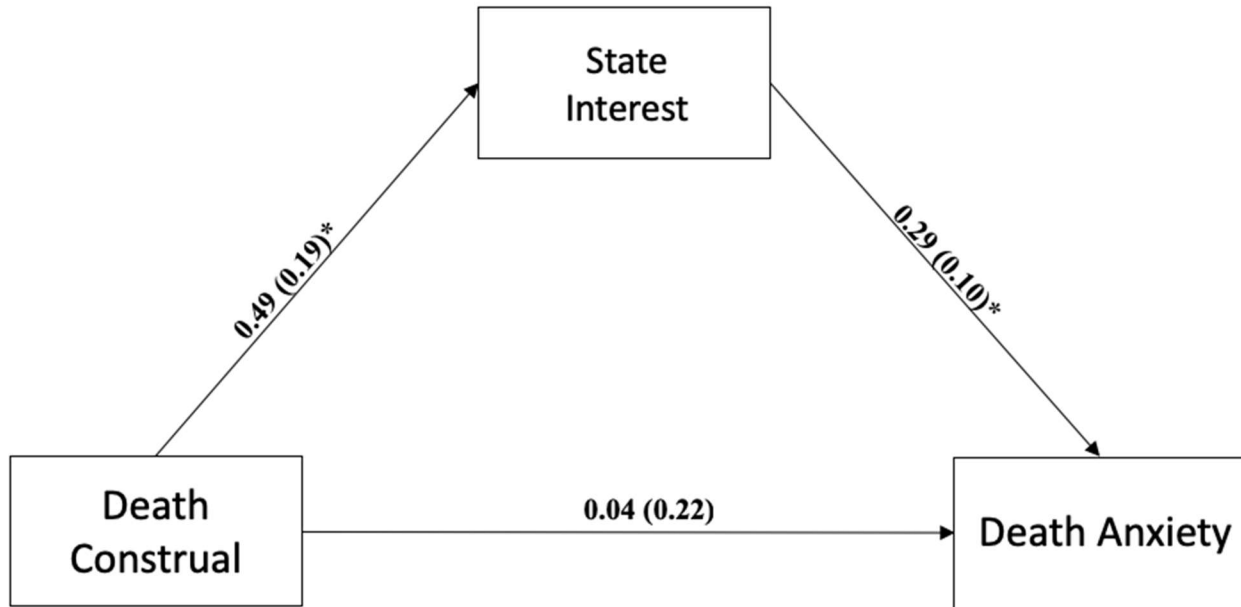


Figure 16. Effect of intellectual death construal on death anxiety through state interest among low thrill seeking individuals.

Note. Conditional indirect effects are significant (*) when the CI does not straddle zero.

Conditional Indirect Effect of Intellectual Death Construal on Death Anxiety through State Interest at Low/Mid/High Levels of Thrill Seeking:

Low thrill seeking: mean estimate = 0.15, SE = 0.08, CI = 0.02, 0.33*

Mid thrill seeking: mean estimate = 0.05, SE = 0.04, CI = -0.02, 0.14

High thrill seeking: mean estimate = -0.05, SE = 0.05, CI = -0.17, 0.04

Table 3. Means, standard deviations, and bivariate correlations between measured variables in Study 3

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. General Openness	4.98	1.25	-	-	-	-	-	-	-	-	-	-	-	-
2. Experiential Open	3.71	0.62	0.50**	-	-	-	-	-	-	-	-	-	-	-
3. Intellectual Open	3.66	0.67	0.57**	0.46**	-	-	-	-	-	-	-	-	-	-
4. C-Joyous Exploration	5.25	1.18	0.42**	0.36**	0.62**	-	-	-	-	-	-	-	-	-
5. C-Stress Tolerance	3.83	1.51	-0.49**	-0.34**	-0.58**	-0.23**	-	-	-	-	-	-	-	-
6. C-Thrill Seeking	3.99	1.41	0.03	-0.05	0.01	0.44**	0.20**	-	-	-	-	-	-	-
7. Positive Affect	2.93	0.96	0.09	0.01	0.16**	0.43**	0.12*	0.44**	-	-	-	-	-	-
8. Negative Affect	1.87	1.07	-0.37**	-0.32**	-0.38**	-0.004	0.55**	0.50**	0.29**	-	-	-	-	-
9. Fear Affect	1.87	1.14	-0.36**	-0.31**	-0.37**	-0.01	0.52**	0.47**	0.31**	0.93**	-	-	-	-
10. Interest Affect	2.85	1.11	0.04	0.05	0.08	0.38**	0.11	0.44**	0.74**	0.33**	0.35**	-	-	-
11. State Interest	2.48	0.77	0.07	0.13*	0.15**	0.45**	0.09	0.45**	0.60**	0.35**	0.36**	0.64**	-	-
12. Death Anxiety	3.64	1.32	-0.17**	-0.07	-0.23**	-0.02	0.27**	0.03	0.05	0.34**	0.36**	0.04	0.14*	-

Note. * = $p < .05$, ** = $p < .01$.

Discussion

Results for Hypothesis 1a in Study 3 were partially supported. Experiential openness interacted with the different death construal prompts, whereby high experiential openness individuals who engaged with the experiential death construal exhibited increased state interest, relative to the dental pain control. However, low experiential openness individuals did not decrease their state interest when given the experiential death construal. These effects were extinguished when different types of affect and religiosity were taken into account, indicating that the state interest cultivated from thinking about death in an experiential manner for high experiential openness individuals can be explained, in part, by these control variables. Positive affect, however, was the only significant control variable ($p < .001$). Hypothesis 1b was not supported: intellectual openness did not interact with the death construal prompts across any condition. Together, results informing Hypotheses 1a-1b indicate that for those individuals who value experiences, if death is framed in a manner that highlights it as an experience, interest can be cultivated. But for those valuing ideas, highlighting death as an idea does not affect interest.

The second hypothesis predicting that the increased interest following an experiential death construal (relative to the control) for high experiential openness individuals would decrease death anxiety was not supported. In fact, the increased interest that occurred was instead associated with an increase in death anxiety for those high in experiential openness. While these findings were not anticipated, they may be critical to understanding the role that openness plays in terror management processes by demonstrating that even if death is delivered in a manner that is specifically catered to one's disposition (in this case, those high in experiential openness), and interest is cultivated, death anxiety remains. These results also further support the argument put forth in the General Discussion section by Boyd and colleagues (2019) that although high

openness individuals may respond positively to death reminders in some ways (i.e., with increased interest and intrinsic orientations under some circumstances), this does not mean that they are free of existential concerns, and notably, death anxiety.

In examining if any of the three facets of curiosity included in Study 3 moderated the effects of different types of death construals on state interest and death anxiety, thrill seeking was the only curiosity facet found to moderate interest (joyous exploration and stress tolerance did not). Individuals low in thrill seeking increased their levels of state interest following the intellectual death construal relative to the dental pain control and this in turn increased their death anxiety. It is somewhat surprising that thinking about death in any capacity would increase interest for this group compared to dental pain because an individual low in thrill seeking tends to find novel or risky situations aversive. At the same time, the concept or idea of death may be something less novel than experiencing dental pain because everyone has had to do think about death at some point in their lives, but not everyone has experienced dental pain.

GENERAL DISCUSSION

General state interest, interest in death, and interest in experiences or ideas related to openness were examined across three studies. Additionally, the manner in which death was engaged with was manipulated in an effort to determine if doing so could impact state interest levels depending on aspect level openness (Study 3). In Study 1, individuals high in experiential openness became interested in death following mortality salience, but only when death interest was measured after an extended delay, following a measure of state interest. In Study 2, mortality salience was not found to cultivate an interest in experiences or ideas related to one's openness as predicted, but unexpectedly, low intellectual openness individuals were found to become more interested in aesthetic experiences (e.g., visual art) following a death reminder. Experiential openness did not moderate interest in aesthetic experiences following mortality salience, nor did intellectual openness moderate interest in intellectual content following mortality salience. In Study 3, as predicted, when death was construed of in a manner that emphasized its experiential qualities, high experiential openness individuals became more interested (relative to a control), and this was in turn associated with an increase in death anxiety. But when death was construed of in a manner that emphasized its intellectual qualities, high intellectual openness individuals did not become more interested. Together these results indicate that individuals can actually become interested in death under particular conditions (i.e., after longer delays for individuals high in experiential openness), and that by engaging with death in an experiential manner, high experiential openness individuals can derive positive benefits in the form of interest. This benefit, ironically, comes with a cost: it increases death anxiety.

Death as an Experience and Death as an Idea

The Pilot Study for Study 3 indicated that operationalizing death as an experience may be more difficult than operationalizing it as an idea. Such difficulties could arise from an unwillingness of participants to report that they view death as an experience or perhaps it is just simply more difficult to get participants to engage experientially with death as opposed to intellectually. One reason for this is that few (if any) have ever experienced death, whereas death as an idea or concept is something that most are familiar with, as it is typically discussed repeatedly throughout life. It makes sense that participants may have been more receptive to viewing death as an idea because intellectualizing death can have a kind of distancing effect from an individual's standpoint, making it less anxiety provoking. In this way, death is no longer something to be feared when it is nicely packaged as something to be politely discussed or philosophized about. The formal study of terror management theory can even be viewed as an intellectualization of death. Surely, doing so lessens the visceral blow of having to engage with death experientially, because it distances the self. Viewing death as an experience may in some ways remind individuals of what is so terrifying about it because the *experience* of death more clearly crosses boundaries, albeit physical ones, as opposed to the blurrier boundaries between oneself and the *idea* of death.

When death is successfully operationalized as an experience, my findings demonstrate that it has a positive impact on interest, at least for individuals high in experiential openness. Finding ways to more easily facilitate the willingness of high experiential openness individuals to view death as an experience could provide benefits to them, like further increases in interest. But while interest in and of itself may be beneficial, Study 3 demonstrates that such interest may not be unequivocally good, and that associated increases in death anxiety may also occur.

Can Death Anxiety and Interest Really Co-Exist?

Results from Study 3 demonstrate that although experientially engaging with death can facilitate interest for high experiential openness individuals, it does so at a cost because death anxiety also increases. Death anxiety was expected to decrease to the extent that interest was facilitated for these individuals, not increase. Why and how then might these counterintuitive results be occurring? Results from Boyd and colleagues (2019) may help shed some light on these unanticipated results. Boyd and colleagues (2019) found when high openness individuals were given the opportunity to push death-related content away following a mortality salience prompt, they actually let such content linger a bit longer, and their self-esteem increased from doing so. Although self-esteem was not measured in Study 3, it may be the case that the interest facilitated from thinking about the experience of death similarly increases self-esteem and allows high experiential openness individuals to further engage with death. In a sense, a kind of push and pull may occur for high openness and high experiential openness individuals whereby they are drawn to death, but still anxious about it, and it is by engaging with it that they attain the requisite psychological shield (i.e., self-esteem) to be able to become further engrossed in it. Additional research is certainly required to determine if increased self-esteem may be what is driving the interest that allows high openness and high experiential openness individuals to engage with death.

Aspects of Openness and Curiosity

Across these three studies results indicated that experiential openness most consistently moderated interest responses following mortality salience (as in Studies 1 and 3). Intellectual openness moderated interest in aesthetic experiences following mortality salience in Study 2, but these results were the opposite of what was predicted, and it did not moderate interest in

intellectual content as expected. Only one facet of curiosity, joyous exploration, moderated interest responses in Study 1, but in Studies 2-3, it did not. Thrill seeking, another facet of curiosity moderated interest in Study 3, but in neither of the first two studies. While all five facets of curiosity were used in Study 1 and only three of these five were used in Studies 2-3 on account of the null effects in Study 1, it appears as though the facets of curiosity measured in the current set of studies do not consistently predict interest responses in the wake of mortality reminders. Experiential openness, however, is an aspect of openness that does appear to moderate interest responses following mortality salience. As such, it may prove useful to examine this aspect of openness in future research to further explore how openness moderates terror management effects and interest appraisals in the wake of mortality reminders.

Limitations

There were a number of limitations across these studies including the number and placement of personality measures used, the online platforms used to attain each sample (mTurk and SONA), and the use of explicit measures of death interest and death anxiety. With respect to the first point, participants were required to take far more personality measures than in past research examining openness in terror management contexts. In this past research, a brief measure of openness was administered at the very beginning of the studies, and the majority of times, it was immediately followed by the mortality salience manipulation (see Boyd et al., 2017; Boyd et al., 2019). In this set of studies, this brief openness measure came after a more extensive measure of openness measuring each of the aspects of openness (BFAS; DeYoung, 2007), as well as a five-facet curiosity measure (5DC, Kashdan et al., 2018). It may not be surprising that there were null results occurring when using the general openness measure (TIPI; Gosling et al., 2003) as a moderator of various forms of interest, but not the more extensive BFAS (DeYoung,

2007) which was included earlier on in the set of personality measures (not last, like the TIPI). Certainly, with online studies participants are also more distracted throughout the course of the experiment, and this may have impacted their ability to carefully assess items on the brief TIPI included at the end of the personality measures, subsequently blunting its predictive value. Because these were online experiments, the assessments of interest in death and death anxiety were explicit, not implicit, as might have been more easily administered in the controlled lab environment. At the same time, the explicit death interest and death anxiety measures in the current research tell us something different from implicit measures, and specifically, the willingness of an individual to consciously report on their interest in death and death anxiety. While this is a limitation, it is also an asset to the current research because explicit responses toward death are rarely assessed in terror management research given the basic tenets under which the management of death anxieties function (at an implicit level, usually).

CONCLUSION

The fact that death can cause terror does not mean that it cannot, at the same time, cultivate interest. My research demonstrated that individuals high in experiential openness became more interested in death after a longer delay following mortality salience, and when death was construed in a manner that corresponded with their openness, state interest also increased (but ironically, so did death anxiety). These studies are the first to demonstrate an aspect of openness, and specifically experiential openness, is a relevant predictor of interest (and interest in death) and provides some corroboration for Boyd and colleagues (2017) argument that death can be interesting to the extent that one is interested in novel experiences.

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APPENDICES

Appendix A: Big Five Aspect Scale

INSTRUCTIONS: Here are a number of characteristics that may or may not describe you. For example, do you agree that you seldom feel blue, compared to most other people? Please fill in the number that best indicates the extent to which you agree or disagree with each statement listed below. Be as honest as possible, but rely on your initial feeling and do not think too much about each item.

- 1 – Strongly Disagree
- 2 –
- 3 – Neither Agree Nor Disagree
- 4 –
- 5 – Strongly Agree

1. Am quick to understand things
2. Enjoy the beauty of nature.
3. Have difficulty understanding abstract ideas.
4. Believe in the importance of art.
5. Can handle a lot of information.
6. Love to reflect on things
7. Like to solve complex problems.
8. Get deeply immersed in music.
9. Avoid philosophical discussions.
10. Do not like poetry.
11. Avoid difficult reading material.
12. Seldom notice the emotional aspects of paintings and picture
13. Have a rich vocabulary.
14. Need a creative outlet.
15. Think quickly.
16. Seldom get lost in thought.
17. Learn things slowly.
18. Seldom daydream.
19. Formulate ideas clearly.
20. See beauty in things that others might not notice.

Experiential/Intellectual openness

Intellectual openness: 1, 3R, 5, 7, 9R, 11R, 13, 15, 17R, 19

Experiential openness: 2, 4, 6, 8, 10R, 12R, 14, 16R, 18R, 20

Reverse response scores for items followed by “R” (i.e. 1=5, 2=4, 4=2, 5=1). To compute scale scores, average completed items within each scale. To compute Big Five scores, average scores for the two aspects within each domain.

Appendix B: Five-Dimensional Curiosity Scale

INSTRUCTIONS: Below are statements people often use to describe themselves. Please use the scale below to indicate the degree to which these statements accurately describe you. There are no right or wrong answers.

- 1 – Does not describe me at all
- 2 – Barely describes me
- 3 – Somewhat describes me
- 4 – Neutral
- 5 – Generally describes me
- 6 – Mostly describes me
- 7 – Completely describes me

Joyous Exploration:

1. I view challenging situations as an opportunity to grow and learn.
2. I am always looking for experiences that challenge how I think about myself and the world.
3. I seek out situations where it is likely that I will have to think in depth about something.
4. I enjoy learning about subjects that are unfamiliar to me.
5. I find it fascinating to learn new information.

Deprivation Sensitivity:

6. Thinking about solutions to difficult conceptual problems can keep me awake at night.
7. I can spend hours on a single problem because I just can't rest without knowing the answer.
8. I feel frustrated if I can't figure out the solution to a problem, so I work even harder to solve it.
9. I work relentlessly at problems that I feel must be solved.
10. It frustrates me not having all the information I need.

Stress Tolerance: (entire subscale reverse-scored)

11. The smallest doubt can stop me from seeking out new experiences.
12. I cannot handle the stress that comes from entering uncertain situations.
13. I find it hard to explore new places when I lack confidence in my abilities.
14. I cannot function well if I am unsure whether a new experience is safe.
15. It is difficult to concentrate when there is a possibility that I will be taken by surprise.

Social Curiosity:

16. I like to learn about the habits of others.
17. I like finding out why people behave the way they do.
18. When other people are having a conversation, I like to find out what it's about.
19. When around other people, I like listening to their conversations.

20. When people quarrel, I like to know what's going on.

Thrill Seeking:

21. The anxiety of doing something new makes me feel excited and alive.

22. Risk-taking is exciting to me.

23. When I have free time, I want to do things that are a little scary.

24. Creating an adventure as I go is much more appealing than a planned adventure.

25. I prefer friends who are excitingly unpredictable.

Appendix C: Ten-Item Personality Inventory

INSTRUCTIONS: Please use this list of common traits to describe yourself as accurately as possible. Describe yourself as you see yourself at the present time, not as you wish to be in the future.

- 1 – Disagree strongly
 - 2 – Disagree moderately
 - 3 – Disagree a little
 - 4 – Neither agree nor disagree
 - 5 – Agree a little
 - 6 – Agree moderately
 - 7 – Agree strongly
-
1. Extraverted, enthusiastic.
 2. Critical, quarrelsome.
 3. Dependable, self-disciplined.
 4. Anxious, easily upset.
 5. Open to new experiences, complex.
 6. Reserved, quiet.
 7. Sympathetic, warm.
 8. Disorganized, careless.
 9. Calm, emotionally stable.
 10. Conventional, uncreative.

Openness: 5, 10R

Conscientiousness: 3, 8R

Agreeableness: 2R, 7

Extraversion: 1, 6R

Emotional Stability: 4R, 9

Appendix D: Mortality Salience Prompts and Construals

Conventional Mortality Salience Construal (Studies 1-3):

Please briefly describe the emotions that the thought of your own death arouses in you.

Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.

Dental Pain Comparison Prompt (Studies 1-3):

Please briefly describe the emotions that the thought of dental pain arouses in you.

Jot down, as specifically as you can, what you think will happen to you as you physically experience dental pain.

Experiential Death Construal (Study 3 only):

Please briefly describe, the EXPERIENCE OF DEATH.

Jot down, as specifically as you can, what EXPERIENCING DEATH entails.

Intellectual Death Construal (Study 3 only):

Please briefly describe, the IDEA OF DEATH.

Jot down, as specifically as you can, what the CONCEPT OF DEATH entails.

Appendix E: PANAS-X

INSTRUCTIONS: This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now. Use the following scale to record your answers.

1	2	3	4	5
Very slightly	a little	moderately	quite a bit	extremely
___ cheerful	___ sad	___ active	___ angry at self	
___ disgusted	___ calm	___ guilty	___ enthusiastic	
___ attentive	___ afraid	___ joyful	___ downhearted	
___ bashful	___ tired	___ nervous	___ sheepish	
___ sluggish	___ amazed	___ lonely	___ distressed	
___ daring	___ shaky	___ sleepy	___ blameworthy	
___ surprised	___ happy	___ excited	___ determined	
___ strong	___ timid	___ hostile	___ frightened	
___ scornful	___ alone	___ proud	___ astonished	
___ relaxed	___ alert	___ jittery	___ interested	
___ irritable	___ upset	___ lively	___ loathing	
___ delighted	___ angry	___ ashamed	___ confident	
___ inspired	___ bold	___ at ease	___ energetic	
___ fearless	___ blue	___ scared	___ concentrating	
___ disgusted with self	___ shy	___ drowsy	___ dissatisfied with self	
___ terrified	___ fearful	___ anxious	___ worried	
___ intrigued	___ curious			

Appendix F: State Interest Scale

INSTRUCTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then select the appropriate number that indicates how you *feel* right now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you feel.

- 1 – Not at all
- 2 – Somewhat
- 3 – Moderately so
- 4 – Very much so

1. I want to know more.
2. I feel curious about what is happening.
3. I am feeling puzzled.
4. I want things to make sense.
5. I am intrigued by what is happening.
6. My curiosity is aroused.
7. I feel inquisitive.
8. I feel like asking questions about what is happening.
9. I feel like searching for answers.
10. My interest has been captured.
11. I want more information.
12. I want to enquire further.

Appendix G: Interest in Death Scale

INSTRUCTIONS: A number of statements which people have used to describe themselves and their feelings about death are given below. Read each statement and then select the appropriate number that indicates how you *feel* right now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you feel.

- 1 – Not at all
- 2 – Somewhat
- 3 – Moderately so
- 4 – Very much so

1. I want to know more about death.
2. I feel curious about death.
3. I am feeling puzzled about death.
4. I want death to make sense.
5. I am intrigued by death.
6. My curiosity in death is aroused.
7. I feel inquisitive about death.
8. I feel like asking questions about death.
9. I feel like searching for answers about death.
10. For this item, please select the moderately so response.
11. My interest in death has been captured.
12. I want more information about death.
13. I want to enquire further about death.

Appendix H: Interest in Visual Art and Philosophical Quotations

INSTRUCTIONS: A variety of visual art and philosophical quotations will be presented below (20 total). Please use the following scale to indicate how you feel about the art or quotations. That is, after viewing the art or reading the quotations, indicate how you feel, *at this moment*. There are no right or wrong answers.

Interesting

1 2 3 4 5 6

Boring

7

**Hard to
Understand**

1 2 3 4 5 6

**Easy to
Understand**

7

Comprehensible

1 2 3 4 5 6

Incomprehensible

7

Visual Art

1. The Apology - Mark Ryden
2. Untitled 4/1/91 - Gerhard Richter
3. Night in Black and Gold The Falling Rocket - James Abbott McNeill Whistler
4. The human condition - René Magritte
5. Composition #223 (picture with tops) - Wassily Kandinsky
6. Sequence of Thoughts - Brendan Monroe

Philosophical Quotations

1. History is not like some individual person, which uses men to achieve its ends. History is nothing but the actions of men in pursuit of their ends.
2. Mathematics takes us still further from what is human, into the region of absolute necessity, to which not only the world, but every possible world, must conform.
3. Power is everywhere: not that it engulfs everything, but that it comes from everywhere.
4. Written words differ from spoken words in being material structures. A spoken word is a process in the physical world, having an essential time-order; a written word is a series of pieces of matter, having an essential space-order.
5. The foot feels the foot when it feels the ground.
6. We have already gone beyond whatever we have words for. In all talk there is a grain of contempt.

Appendix I: Aesthetic Fluency Scale

INSTRUCTIONS: Please tell us how much you know about the following artists and art ideas:

- 1 – I have never heard of this artist or term
- 2 – I have heard of this but don't really know anything about it
- 3 – I have a vague idea of what this is
- 4 – I understand this artist or idea when it is discussed
- 5 – I can talk intelligently about this artist or idea in art

1. Mary Cassatt
2. Isamu Noguchi
3. John Singer Sargent
4. Alessandro Boticelli
5. Gian Lorenzo Bernini
6. Fauvism
7. Egyptian Funerary Stelae
8. For this item, please select the I have never heard of this artist or term response
9. Impressionism
10. Chinese Scrolls
11. Abstract Expressionism

Appendix K: Demographics

What is your birth assigned gender? Female Male

What gender do you currently identify as? Female Male Genderqueer
Rather not say other/none of these apply

Please indicate your age: _____

Please identify your ethnic group:

- Hispanic or Latino
- Not Hispanic or Latino

Race/ethnicity:

- African American/ Black
- Hispanic/ Latino(a)
- White/ European American
- Native American/ American Indian
- Asian/ Pacific Islander
- Bi-racial (please specify: _____)
- Other (please specify: _____)

Which of the following do you most identify with?: Theist Agnostic Atheist

How religious do you view yourself?: 1 (*not at all*) 9 (*extremely*)

How spiritual do you view yourself?: 1 (*not at all*) 9 (*extremely*)

What is your sexual orientation?

- Heterosexual/straight
- Lesbian/Homosexual woman
- Gay/Homosexual man
- Bisexual
- Prefer not to say
- Prefer to self-describe (If selected, then “Please describe what your sexual orientation is: _____”)

Is English your primary language?

- No
- Yes

What is the highest degree or level of education you have attained?

- Some high school, no diploma
- High school graduate
- Associate’s degree
- Trade/vocational/technical training

Bachelor's degree
Master's, Doctorate, or Professional degree

Did you engage in any other activities while completing this survey?
No Yes (if yes, please explain)

Have you ever experienced dental pain?
No Yes

In your own words, what was the purpose of the study?

Have you previously participated in any study that asked you questions similar to this one?
No Yes

Appendix L: IRB Approval Letter



RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

9/24/2018

Patrick Boyd, M.A.
Psychology
4202 East Fowler Ave. Tampa,
FL 33620

RE: **Exempt Certification**
IRB#: Pro00037199
Title: Personality and Opinions

Dear Mr. Boyd:

On 9/21/2018, the Institutional Review Board (IRB) determined that your research meets criteria for exemption from the federal regulations as outlined by 45CFR46.101(b):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

As the principal investigator for this study, it is your responsibility to ensure that this research is conducted as outlined in your application and consistent with the ethical principles outlined in the Belmont Report and with USF HRPP policies and procedures.

Please note, as per USF HRPP Policy, once the Exempt determination is made, the application is closed in ARC. Any proposed or anticipated changes to the study design that was previously declared exempt from IRB review must be submitted to the IRB as a new study prior to initiation of the change. However, administrative changes, including changes in research personnel, do not warrant an amendment or new application.

Given the determination of exemption, this application is being closed in ARC. This does not limit your ability to conduct your research project.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mark Ruiz".

Mark Ruiz, PhD, Vice Chairperson
USF Institutional Review Board