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Review

An Appreciative View of the Brighter Side of Terror Management Processes

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Abstract: Physical death is an inevitable part of life. From the perspective of terror management theory (TMT), people's efforts to manage the awareness of death can sometimes have harmful social consequences. However, those negative consequences are merely one side of the existential coin. In considering the other side of the coin, the present article highlights the more beneficial trajectories of the terror management process. For example, the awareness of mortality can motivate people to prioritize their physical health; uphold prosocial values; build loving relationships and peaceful, charitable communities; and foster open-mindedness. Further, the article explores the possible balance between defense and growth motivations, including the motivations toward integrative self-expansion, creativity, and well-being. And finally, we tentatively consider the potential positive impacts of direct confrontations with mortality on terror management processes. In sum, the present analysis suggests that although death awareness can sometimes produce some harmful outcomes, at least under certain conditions it can also motivate attitudes and behaviors that have positive personal and social consequences.

Keywords: terror management theory; mortality salience; defense; positive psychology; growth; motivation

1. Introduction

From seeing news headlines to biking past roadkill to discussing politics, people routinely encounter reminders of the fact that they are mortal creatures. If that is not grim enough, terror management theory (TMT) [1,2] explicates that this awareness of mortality motivates a range of unsettling behaviors and attitudes, including risky behavior, prejudicial attitudes and aggression, and intergroup conflict (e.g., support for war and terrorism). Consequently, terror management theory has earned at least a tacit reputation as a theory that illuminates the dark side of human behavior. However, death awareness does not inevitably lead to personally and socially harmful consequences. Rather, the awareness of death is a two-sided coin, capable of also producing helpful, uplifting, and even at times growth-oriented consequences.

In the present work, we flip the existential coin and shine some light on the brighter side of the awareness of mortality. A fully appreciative review of all of the positive and negative terror management processes documented in the literature would be too broad for the present purposes, and recent theoretical work has covered the positive side of terror management processes in some depth [3]. Thus, the present work provides a brief overview of how death-related motivation can, for example, foster physical health, engender charitable and prosocial behaviors, and cultivate creativity and personal growth. We begin by introducing the central tenets of terror management theory, briefly discuss the recent history and trends of terror management research, and then highlight some of the oft-overlooked findings that illustrate the positive terror management trajectories.

2. Terror Management Theory and Supporting Research

Building on the work of cultural anthropologist Ernest Becker ([4,5]; also Rank [6]), TMT makes two basic assumptions. First, it holds that humans are like other animals in that they have evolutionarily predisposed adaptations that aid survival and help them stay alive, at least long enough to reproduce. Second, it holds that humans are different from other animals in that they have developed some rather sophisticated cognitive abilities, such as the abilities to engage in self-reflective, temporal, and symbolic thought. A given human can cognitively abstract himself from his immediate circumstance—alone on a couch in Nebraska—and reflect on the fact that he (self-reflective) is going to meet his friends next week (temporal) to go camping in the Rocky Mountains (requiring symbolic representations of a particularly beautiful geographic locale). A consequence of such cognitive prowess, however, is that people can use these faculties to imagine a wide range of possible futures much further beyond sleeping under the stars in the Rocky Mountains. That is, people can recognize that there will inevitably come a sleep from which they will not wake.

Thus, a human and a gazelle might both recognize their immediate danger while facing down a hungry cheetah, experience anxiety in the face of that threat, and take emergency maneuvers to evade the risk. However, the human is the one who, despite sitting in the relative comfort and safety of her corner office, can continue to reflect on the fact that one day she will ultimately die. From the perspective of TMT, our office worker's inability to soothe that awareness of mortality via immediate physical recourse (such as by evading a hungry cheetah by hiding behind the coffee table in the break room) means that she must seek alternative recourse. Here, TMT holds that a dual component system

emerged to help people manage that awareness of mortality by (1) striving for a sense of personal value (*i.e.*, self-esteem); within (2) a seemingly permanent cultural worldview. Cultural worldviews are socially constructed and validated sets of beliefs that help give the world meaning and order. They provide values and standards of worth and offer those who adhere to these standards the opportunity to become part of something larger and longer lasting than themselves. Such cultural belief systems also offer permanence via secular means (e.g., legacy via progeny, teaching, technological or business innovation, science, art, *etc.*) or through explicitly religious means (e.g., promises of literal permanence, via heaven, paradise, reincarnation, *etc.*). From this perspective, self-esteem then serves to indicate how well a person is doing at living up to his or her cultural worldview's beliefs, standards, and values. Thus, TMT argues that people can manage the awareness of mortality by maintaining the perception that one is an object of value in a seemingly permanent system of meaning.

In the past nearly 30 years, hundreds of studies from around the globe have provided support for terror management theory [2]. One of the most common methods of testing TMT stems from the *mortality salience hypothesis*, which states that if cultural worldviews and self-worth help manage concerns about death, then increased mortality salience (MS) should motivate people to strive for self-esteem and bolster and defend their cultural worldviews. A large body of research has shown, for example, that participants assigned to MS conditions (e.g., writing about death, exposure to death-related imagery or words), compared to those assigned to other psychologically aversive conditions (e.g., dental pain, uncertainty, failure, public speaking), evidence increased affinity for those who share important cultural beliefs and against those who hold opposing beliefs [7]; aggression toward those who threaten important cultural beliefs [8]; reluctance to misuse sacred cultural icons (e.g., American flag, crucifix; [9]); and desire for material wealth [10].

Additional research has further revealed a dual-process model of terror management [11,12]. When death thoughts are in "proximal", focal awareness (e.g., immediately following an explicit reminder of death, seeing a news headline, or seeing the word "death" in a lab setting) people engage in "proximal" defense strategies to remove threatening death thoughts from conscious attention. Proximal strategies are deliberate, pseudo-rational efforts to reduce, distort, or delay a perceived imminent threat of mortality. For example, after being explicitly primed to consciously think about death, people may avoid threatening health information [13] or proactively try to improve their health [14]. However, when death awareness becomes more distal—when it is non-conscious but cognitively accessible (e.g., when death awareness is consciously removed from focal awareness, when mortality primes are presented subliminally, or when they are followed by a distraction task [11])—people are no longer able to directly and logically address the problem of mortality. Instead, they engage in "distal" defense strategies. Distal strategies are non-conscious efforts to manage the problem of impermanence by, as we mentioned above, maintaining the perception that one is an object of value in a seemingly permanent system of meaning.

3. Two Sides of the Existential Coin

When TMT was first presented in the 1980s, the research it initially generated followed the general tone of Becker's original writings: seeking to understand the underlying motivator behind culture and self-esteem and apply that understanding to harmful social phenomena (e.g., aggression). That research

also mirrored the broader trends in social psychological research, aimed at making sense of humans' destructive capacities. Indeed, Pyszczynski *et al.* stated that one of the original goals of the theory was to help understand why "people who are different from each other have such a hard time peacefully coexisting" ([15], p. 3). As a result, many of the early studies testing the theory examined the impact of terror management processes on socially problematic phenomena (e.g., prejudice). Later, when researchers sought to delve into the nuances of terror management mechanisms, they built on that prior work, borrowed those prior methodologies, and continued to assess negative outcomes. This helped set the stage for a 25-year track record of TMT research demonstrating the impact of death awareness on harmful personal and social consequences.

Thus, as evidence for terror management theory accumulated, the findings generally tended to illustrate how the awareness of death underlies the dark side of human motivation. Research has repeatedly demonstrated that terror management processes contribute to intergroup biases [7,16], racism and stereotyping [17], and aggression towards individuals who threaten one's cultural worldview [9]. Furthermore, a number of studies have shown that, in an effort to protect one's cultural worldview and maintain a sense of self-worth, people are willing to engage in risky and life-threatening behaviors. For example, MS has increased participants' willingness to martyr themselves for their worldviews [18,19]; increased fundamentalists' willingness to refuse modern medical treatment in favor of religious treatments [20]; and reduced beach-goers willingness to protect themselves from harmful sun exposure [14].

Given these research trends, it may perhaps seem that terror management theory is a pessimistic theory, particularly well-suited to explain the dark side of human behavior [21,22]. However, the awareness of death does not inevitably lead to such adverse outcomes; TMT applies equally to the brighter side of the existential coin. TMT specifies that people seek to manage death awareness, but it does not specify that the mechanisms for doing so necessarily produce harmful consequences. Indeed, MS has been shown to motivate people to defend and uphold the prominence of their cultural systems by lashing out at threats [9], but also by giving to a local charitable organization [23]. The latter case is but one example of an emerging body of evidence of what one might call "positive" terror management.

On that point, it is worth clarifying what we mean by "positive" terror management. Defining what constitutes a positive (*vs.* negative) outcome is not necessarily straightforward, but can be approached logically and systematically. Although our choices in determining what qualifies as positive are ultimately subjective, we aim to reduce subjectivity as much as possible by following recent work on the science of morality [24,25]. According to that literature, "positive" behaviors and attitudes minimize harm to oneself and others, and promote well-being in physical (e.g., cardiovascular health), social (e.g., cooperative and prosocial interpersonal and intergroup relationships), and psychological (e.g., satisfaction with life, absence of mental disorders) domains. In short, positive terror management occurs when people manage existential concerns in ways that minimize harm and foster physical, social, and psychological well-being among themselves and others.

One important clarification here is that, at a basic level, successful terror management strategies help avoid anxiety and maintain one's own psychological peace [26,27]. However, that function is common to all behavioral terror management strategies. Rather, positive terror management refers to terror management strategies that have helpful functions beyond the basic management of death concerns. On a related note, even those terror management strategies that, in moderation, one might

consider "positive" have the potential to ultimately cause harm to the extent that they are taken to extremes or are abused (e.g., even love can cause damage if the flames of passion burn hot enough or are mishandled).

The sections that follow illustrate some of the positive terror management trajectories found in the empirical literature. We begin by examining how conscious efforts to manage death awareness (proximal strategies) can lead to behaviors that promote one's own physical health, and then move on to review how efforts to manage non-conscious death thoughts (distal strategies) can yield personal and social benefits. Subsequently, we broaden the discussion to consider the most optimal ways that individuals can balance defensive terror management needs alongside the conditions that facilitate personal growth, including self-determination and other positive orientations toward integrative self-expansion, creativity, and well-being. Finally, we tentatively consider the potential positive effects of direct confrontations with mortality (e.g., trauma, *etc.*) on terror management processes.

4. Positive Management of Conscious Death Awareness

As we mentioned earlier, when people experience conscious death thoughts, they can direct rational or pseudo-rational efforts to deal with the problem of the risk of death (e.g., wearing a seatbelt, quitting smoking). Such strategies are often deliberate efforts to reduce concerns about physical death, and as such, they can often have implications for physical health [28]. On one side of the coin, these proximal responses could have negative health implications; research has shown that one way to deal with conscious death thoughts is to actively deny any life-threatening health vulnerabilities [13]. Specifically, this work found that immediately after an explicit mortality salience induction, participants denied a health vulnerability that could lead to an early death. Of course, such an effect could have negative implications if a person's denial leads them to avoid needed medical treatment.

On the other side of the coin, however, there is evidence that conscious death thoughts can lead to behaviors that have positive health consequences. In particular, people can manage conscious thoughts of death by taking measures to improve health. Managing conscious death thoughts through healthy (*vs.* unhealthy) routes depends on individual differences, as well as the availability of options for effectively coping with health concerns. To begin, when health-promoting options are available and perceived, death thoughts in conscious awareness augment healthy behavioral intentions, such as the intentions to exercise [29] and protect one's skin with sunscreen [14]. Additionally, conscious death thoughts reduce smoking intensity among smokers with low cravings [30]. The beneficial effects of conscious death thoughts on healthy behaviors are particularly evident when healthy behaviors are aimed specifically at reducing the risk of death [31] and among individuals who believe that their own actions can have a positive impact on their health [31,32]. Thus, to best channel these proximal responses towards healthy (*vs.* unhealthy) responses, it appears important to ensure that healthy behavioral options are available and perceived, and to promote a sense that healthy behaviors will indeed have a positive impact on one's health.

In short, although conscious death thought could potentially cause people to avoid or deny relevant health risks, research clearly shows that it can also motivate behaviors designed to address health risks and promote physical well-being.

5. Positive Management of Non-Conscious Death Awareness

Once death awareness has been either pushed out of conscious awareness via the above-mentioned proximal terror management strategies, or has been primed outside of conscious awareness (e.g., following an explicit prime with a delay/distracter task, or using subliminal primes), it becomes non-consciously activated. Most terror management research has been devoted to understanding the consequences of non-conscious death awareness. Because death awareness is not in their focal attention, people are not able to directly and logically address the problem. Instead, the individual symbolically manages the awareness of death by striving to become an object of value in a seemingly permanent system of meaning. At this distal level, individuals' contingencies of self-worth and their other salient value systems constitute the main forces determining whether individuals manage death concerns in ways that have positive (*vs.* negative) consequences. We begin by considering how contingencies of self-worth direct people to manage death concerns in ways that improve their physical well-being and foster goal pursuit, and then discuss distal terror management strategies that can have positive effects on relationships and families, immediate communities, as well as the global community.

5.1. Contributions to Physical Health

Some cultural worldviews involve contingencies of worth that emphasize physical health. Explicitly valuing physical health and basing one's self-worth on being healthy can create conditions where people can manage the non-conscious awareness of death by striving to live up to those (healthy) standards. For instance, Arndt *et al.* [29] first measured the extent to which participants based their self-worth on being physically fit. Next, they randomly assigned participants to either an MS or a control condition (followed by a delay to allow death thoughts to fade from focal attention; similar methods were used in all subsequently described research) and then measured participants' exercise intentions. Compared to the control condition, MS increased intentions to exercise, but only for those who based their worth in being physically fit. This illustrated that death concerns can motivate healthy behavior for those who base their self-esteem on being healthy.

Although not all contingencies of self-worth are directly based on physical health, certain alternative contingencies can still bear important health implications. For instance, people might base their self-worth on their physical appearance, being accepted by others, or feeling empowered. Additionally, research has shown that when women are exposed to standards of beauty suggesting that pale skin is pretty (*vs.* bronze as beautiful), MS reduces women's intentions to expose themselves to harmful ultraviolet radiation [33]; when social smokers are exposed to information suggesting that smoking is "uncool" and not accepted, MS fosters intentions to quit smoking [34]; and when women are told that performing breast self-exams is empowering, MS increases intentions to perform breast self-exams [31]. Together, these findings show that efforts to manage unconscious death thoughts can promote healthy behavior when healthy values and contingencies of self-worth are salient.

5.2. Goal Pursuit

Research also suggests that death awareness may alter behavior in ways that have beneficial personal consequences beyond promoting physical health. In particular, research suggests that people

manage death concerns by bolstering efforts to achieve personal goals. One study demonstrated that among individuals devoted to increasing their strength, MS increases effort on a strength performance task [35]. Specifically, after MS (*vs.* control) these individuals squeezed a hand dynamometer (which measures grip strength) harder than prior to MS. MS clearly made these individuals put more effort into this goal-relevant task. Other work has similarly shown that MS enhances basketball performance [36] and improves performance on academic tasks (e.g., reading comprehension) [37,38]. Taken together, this work suggests that the awareness of death may underlie the motivation to excel and is beneficial for goal pursuit.

5.3. Romance and Family Ties

In addition to motivating attitudes and behaviors that bear beneficial consequences for physical health, distal terror management strategies can help foster healthy relationships. In romantic contexts, the love and approval often offered in many romantic relationships can help individuals feel valued and worthwhile [39], thus helping to manage existential concerns (for a review, see [40]). Indeed, studies have found that MS bolsters striving for romantic intimacy [41], enhances commitment to romantic relationships [42,43], and leads to endorsements of romantic and selfless relationship partners and styles of love [44].

As relationships blossom into marriages and/or families, efforts to manage existential concerns can also strengthen those institutions. For example, evidence suggests that existential concerns may motivate the commitment to one's family. After the 1995 Oklahoma City bombing (which no doubt activated thoughts of death), divorce rates in the surrounding counties dropped [45]. This suggests that death awareness can encourage stronger commitment to marriage and/or families. Additionally, people may become motivated to have children because children provide an opportunity to ensure that aspects of one's self will "live on" through one's progeny [46]. Indeed, several studies have illustrated that mortality salience increases motivation to have and care for children [47–49].

5.4. Social Groups and Communities

Beyond close relationships and families, distal terror management efforts can also positively affect social group identities and community engagement. For one, terror management processes can lead individuals to put more effort into valued tasks, which helps fuel culturally valuable achievements. For example, MS has been shown to enhance strength output [35], sports performance [36], and academic performance [37,38] when those domains are culturally relevant. Likewise, terror management processes can fuel additional prosocial responses. First, it is common for cultural worldview beliefs to promote values and standards of worth that direct people to treat each other, for example, fairly and with compassion. Second, cultivating and contributing to positive social groups is one way to gain a sense of worth and protect the prominence and permanence of one's culture.

5.4.1. Prosocial Values and Contingencies of Self-Worth

Research has shown that when prosocial values (e.g., compassion) and contingencies of worth (e.g., being helpful) are salient or particularly dominant for an individual, distal terror management processes

can motivate people to abide by them. For example, one set of studies [50] showed that when the cultural value of helping others was made salient, MS increased the frequency of helping behavior. In an illustrative field study, individuals were observed either walking through a cemetery (*i.e.*, MS condition) or through a parking lot (*i.e.*, control condition). While walking, the naive participants passed a confederate (*i.e.*, an accomplice of the researchers) that was talking on the phone either about the value of helping (*i.e.*, "I agree, helping is an American value") or another topic (*i.e.*, "I agree, she should learn to be more self-sufficient"). After that, participants encountered a second confederate who dropped a notebook while struggling with her backpack. When participants were reminded of the value of helping, those who had been walking through the cemetery were much more likely to stop and help pick up the confederate's notebook. Additional studies [50] conceptually replicated these findings, showing that when helping values are salient, MS can increase the likelihood of helping disabled and homeless individuals. Similarly, Jonas *et al.* [51] found that when helping and prosocial values are salient, MS can increase the willingness to help ill children and to help others with their school work.

In a related vein, based on the notion that tolerance is a more dominant value among American liberals than American conservatives, Greenberg, Simon, Pyszczynski, Solomon, and Chatel [52] hypothesized that mortality salience would increase derogation of out-group individuals among conservatives, but not liberals. Evidence supported that hypothesis, and a second study found that experimentally priming the value of tolerance eliminated derogatory worldview defenses that were otherwise observed after MS (see also [53]). Subsequent research has similarly shown that, after MS, priming egalitarian values reduces prejudice toward Blacks among non-Black participants [50]. In a related vein, Jonas *et al.* [51] tested the impact of terror management processes on attitudes about international pacifism. Consistent with prior work, MS decreased pacifism when pacifism values were not salient. However, when pacifism values were salient, MS increased pacifism. Other findings have similarly shown that, whereas religious fundamentalists support a violent worldview defense after MS, making salient compassionate religious textual passages eliminated that effect [54].

The above-reviewed research demonstrates that prosocial values and contingencies of self-worth, such as helping, tolerance, egalitarianism, and pacifism, can bend the trajectories of terror management toward more positive outcomes.

5.4.2. Group Identification and Community Involvement

Belonging and contributing to groups and communities (e.g., families, religions, universities) can help people feel as if they are part of something that is bigger, more impactful, more significant, and more enduring than themselves. Consistent with that idea, research has shown that MS increases the desire to affiliate with others [44] and more strongly identify with one's social groups [55]. These in-group investments may perhaps help cultivate and contribute to organizations such as community youth groups, services for the elderly or disabled, or other charities. Indeed, MS increases donations to charities, particularly when the charity aims to help the individuals' own community [23,56].

One potential problem with strong investments in one's social groups, however, is that it can potentially lead to intergroup conflict (e.g., prejudice, scapegoating, war [57]). As we reviewed at the outset, terror management processes can certainly incite prejudicial attitudes and intergroup aggression, but they do not necessarily have to lead to such outcomes. In fact, under certain circumstances, the

awareness of death may actually help create a sense of unity between members of disparate social groups and can potentially engender more cooperative, inclusive, and peaceful attitudes.

Based on the notion that the mere existence of boundaries between social groups contributes to intergroup conflict, the common in-group identity model [58] asserts that one way to reduce in-group conflict is for members of subordinate groups to recategorize themselves as members of a larger superordinate group. According to Allport's [57] contact hypothesis, one way to do this is by having personal contact with individuals across group boundaries. As such, Motyl *et al.* [59] hypothesized that the effects of mortality salience on negative attitudes towards out-groups should be reduced if a personal connection between in-group and out-group members is established. In that research, after the MS (*vs.* control) induction, participants read stories about other people's favorite childhood experiences and were asked to recall their own similar childhood experiences. Some participants were told that the stories were authored by Americans (in-group), whereas others were told that the stories were authored by a variety of people from around the globe (out-group). MS increased negative attitudes towards immigration (worldview defense), except when participants connected with childhood stories authored by individuals from out-groups. This illustrates that blurring the boundaries between groups can promote a broader sense of common humanity, and can bend terror management efforts towards more inclusive treatment of out-group individuals.

Related work has built from Sherif's [60,61] classic Robber's Cave studies in which hostile relations between two groups of boys quickly became cooperative when they faced a common threat. In those studies, Pyszczynski, Motyl *et al.* [62] tested whether a common threat eliminates the effect of mortality salience on increased out-group hostility, and whether MS can encourage a positive relationship between subordinate groups when they face a common threat. Participants were presented with a story about either global warming (*i.e.*, a global, superordinate threat to all nations) or a local flood (*i.e.*, a subordinate threat to just a small region of the world), and then were either reminded of death or a control topic. In one study, MS increased Americans' militaristic attitudes towards Iran when participants imagined a localized catastrophe, but not when participants were reminded of global warming. In a second study, when participants were reminded of global warming, MS increased support for international peacemaking. Additionally, a third study, conducted among Arab participants in Isreal during during the January 2009 Israeli invasions of Gaza, showed that mortality salience increased support for peaceful coexistence with Israeli Jews among those who imagined global warming and had high perceptions of common humanity.

Together, this work illustrates that situations that foster more inclusive superordinate group identifications can create conditions where existential motivation can lead to a more inclusive treatment of individuals who might otherwise be out-group members.

5.5. Sustainability

Thus far, we have reviewed findings that impact intergroup conflict and harmony. However, there is also evidence that terror management processes can have a positive impact on the global community by encouraging environmentally sustainable behaviors. The mounting popularity of the "green", sustainability movement has amplified the value people place on environmentally friendly behaviors and led some individuals to derive a sense of self-worth from being green [63]. Vess and Arndt [64]

thus hypothesized, and demonstrated, that MS augments concerns for the environment among individuals who base their self-worth on sustainability. In a conceptual replication, Fritsche, Jonas, Kayser, and Koranyi [65] showed that when pro-environmental values were experimentally heightened, MS increased sustainable behaviors. This research illustrates that when people value being green, terror management processes can increase environmental friendly behavior.

6. Existential Encounters as a Springboard to Personal Growth

Viewed on its own, TMT offers a defense-oriented perspective of mental life, with individuals' primary objective being to shield (*i.e.*, "defend") themselves from the awareness of death, regardless of whether that defensive motivation leads to negative or positive social consequences ([3] for review). However, that perspective fails to provide a complete portrayal of human motivation. Indeed, if we were merely to consider TMT in isolation, it would be difficult to understand how individuals ever develop and grow or explore new cultures or ideas. However, defensive terror management processes do not exist in a conceptual vacuum, and we now turn to consider the impact of the mortality awareness within a dual-motivation system that encompasses both defense and growth motivations [66,67].

6.1. Balancing Defense-Oriented and Growth-Oriented Responses to Death Awareness

Work in various domains suggests that negative and positive affective experiences occur on separate dimensions, as opposed to simply being at the opposite ends of a single dimension (e.g., [68]). Further research shows that each dimension involves distinct motivational systems geared toward avoiding negative affective experiences and approaching pleasant and affectively positive experiences (e.g., [69]). Thus, we can understand, for example, how one can simultaneously seek out pleasures of the flesh while taking steps to protect oneself against the hazards of unwanted pregnancy and disease. At a more abstract level, it seems likely that self-expansive motives and defensive motives may similarly operate on separate dimensions. On the one hand, defense-oriented motivation is directed toward avoiding affectively unpleasant and threatening experiences, avoiding or rebuffing threats, and striving to perceive oneself as a valued part of a meaningful and permanent world. On the other hand, growth-oriented motivation is directed toward affectively positive and meaningful integration of new experiences and ideas into the self.

Growth motivation rests, conceptually, on the intrinsic motivation to freely integrate new information and experiences into the self, thereby changing one's existing psychological structures (including the self) to accommodate a new and expanded understanding of oneself and the world. A number of theoretical and empirical traditions have made advances toward better understanding of this type of motive. For example, the self-expansion model posits that the motivation to acquire new identities, capabilities, and perspectives can fuel close relationships and the exploration of novel personal and social activities [70,71]. Work on flow [72] has characterized the quintessential growth experience as optimal enjoyment and interest felt while engaged in learning an activity that is just beyond the reach of one's current skills or knowledge. Additionally, research grounded in the broaden-and-build theory of positive emotions [73,74] suggests that positive emotions such as interest can momentarily broaden people's thought-action repertoires, allowing them to build their various physical, social, and intellectual skills. Still other research on self-determination theory (SDT) [75] characterizes intrinsic

motivation as a fundamental, self-expansive process. According to SDT, as the individual's core needs are met, the self begins to grow over time: integrating new information, changing and expanding existing psychological structures, and assuming a more self-directed mode of being in the world. Although each perspective entails unique and nuanced differences, interfacing SDT and TMT suggests some ways that such core need satisfaction is involved in balancing defense- and growth-oriented responses to increased death awareness.

Building largely on the works of White [76], DeCharms [77], and Bowlby [78], SDT posits that growth-oriented motivation, optimal social functioning, and personal well-being depend on the satisfaction of three "basic psychological needs": competence, autonomy, and relatedness [75,79]. In other words, this means whether or not individuals are able to effectively (competently) act on their internalized (autonomous) values while maintaining positive social relationships with others (relatedness). SDT describes the need for *autonomy* as the need for self-organization and self-regulation of one's attitudes and behavior in accordance with deeply internalized values, attitudes, desires, or beliefs. The need for *competence* is described as the need for proactive engagement of challenges and the sense of effectiveness and mastery within one's environment. The need for *relatedness* is characterized as the need to experience intimacy, friendship, or belongingness with others. Considerable research has shown that satisfaction of these basic needs underlies peoples' capacity to optimally develop and expand the self, leading to enhanced vitality and well-being. For example, need satisfaction is associated with more enjoyable learning and job environments, greater task engagement and vitality, and better academic and job performance, as well as higher self-esteem, greater daily emotional well-being, better relationships, and higher life satisfaction (see [80] for extensive review). Further, research has illustrated that goals and social environments that help satisfy needs are associated with many of the same outcomes that are directly associated with need-satisfaction (e.g., [81–84]). In short, the benefits of need-satisfaction for growth and well-being have been supported in a broad range of contexts.

Although we (and others, e.g., [67]) concur with Deci and Ryan [80] that need satisfaction appears to be a precondition for personal growth, we are not convinced that need satisfaction entails exclusively growth-oriented components. Instead, we view autonomy, competence, and relatedness as not only helping to promote integrative self-expansion and well-being, but also helping to defensively protect against negative affective experiences by bolstering an intrinsic sense of value within a more fully integrated system of meaning. Having a sense of autonomy, competence, and relatedness no doubt sets the stage for personal growth and self-expansion. However, a strong theoretical tradition running through Zilboorg [85], Brown [86], Maslow [87], Becker [5], and Yalom [88] has also typically held that adequate psychological defenses must be maintained before greater personal growth can ensue. These perspectives raise the possibility that need satisfaction balances growth- and defense-oriented functions. Whereas SDT emphasizes the importance of relatedness, competence, and autonomy for supporting the integration of new experiences and social skills, TMT would view those same growth-supporting conditions as also serving a protective function.

To begin with relatedness, TMT views effective participation in close relationships and interpersonal relatedness (as mentioned above) as protecting against mortality awareness by maintaining a sense of value within the seemingly everlasting fabric of society (see [36]). As just a few examples, undermining important relationships increases death-thought accessibility, MS increases efforts to enhance close, loving relationships (e.g., [38]), and incorporating relationships and social structures into one's identity

helps prevent anxiety and well-being deficits that otherwise result from the awareness of death [26,89]. This work shows that relatedness helps defend against death concerns.

Research has also demonstrated that competence can similarly serve a defensive terror management function. Despite the valiant efforts of cultural and technological innovation, individuals must still play witness to the cold fact that we humans remain ultimately vulnerable to outside forces. Perceptions that one can competently accomplish one's goals and influence one's environment likely help quell the resulting sense of existential vulnerability. In this sense, perceptions of competence and control provide an indication of the degree to which she feels capable of navigating an existentially hazardous world [90,91]. SDT research has revealed that competence is not an isolated necessity; a competent individual must also feel relatively free from the external demands and pressures of others in the outside world. Indeed, on that point, DeCharms ([77], p. 270) noted that people need to perceive that they are the origin of their actions and attitudes, an expression of "the desire to be master of one's fate". In other words, it may do little good to act competently as a "pawn" for external pressures. Rather, SDT holds that people need to feel that their competencies are in the service of their own self-determined desires [75]. Becker [5] likewise argued that the existential threat of mortality gives rise to the need to live and act as a willful and free individual, with a unique and self-fashioned identity, striving to abide by one's internalized cultural system of beliefs and values. Thus, competently influencing one's environment according to an autonomous integrated and self-determined set of beliefs, attitudes, or goals may help protect against the awareness of mortality.

In that light, emerging research has begun to directly test the idea that need satisfaction can serve as a balance point between defense- and growth-oriented responses to increased death awareness, helping to both protect individuals against the awareness of mortality and orient them to a more appreciative and integrative view of the world around them. To test this idea, Vail, Arndt, and Pope [92] reasoned that if need satisfaction helps serve as a defensive buffer against death awareness, then naturally or experimentally elevated need satisfaction should eliminate the need for other defensive responses to MS. Indeed, in one study, in a neutral feedback condition, death reminders increased worldview defense (derogation of anti-USA essayist) except among participants who reported heightened orientation to need-satisfying goals. However, when participants received need-satisfying feedback instead, death reminders no longer increased worldview defense, regardless of participants' orientation to need-satisfying goals. Thus, this study provided experimental evidence that heightening need-satisfaction eliminates the need for alternative worldview defenses after MS. Similarly, a second study found that death reminders increased death-thought accessibility among those with low, but not high, perceived need-satisfaction.

From another angle, Vail, Arndt, and Pope [92] reasoned that, if need satisfaction helps serve a defensive terror management function, then death reminders should bolster motivation to experience basic need-satisfaction and to avoid undermining need satisfaction. In those studies, not only did MS enhance motivation to experience a sense of need satisfaction, it also motivated support public policy reforms if perceived as need-satisfying (*i.e.*, autonomy-supportive) and motivated opposition to reforms if perceived as need-undermining (*i.e.*, controlling). Additionally, MS even increased the desire to spend time on mundane activities (e.g., reading, work, or spending time with one's parents) when people perceived those activities as need-satisfying. However, when people perceived those activities as need-undermining, MS increased desire to avoid them by spending less time doing them. This work

provides some initial evidence suggesting that need satisfaction—the conditions known to support personal growth and self-expansion—can also help serve a protective function.

However, the balance perspective goes beyond the simple defense orientation of TMT, and holds that need satisfaction offers a balance between providing psychological defenses and preparing people for personal growth (*i.e.*, for engaging in self-expansive integration of new ideas and the positive impact of such enriching processes on one's well-being). Because defensive protections of need satisfaction are in place, need-satisfied individuals might instead perceive death in more positive or appreciative terms. If so, MS should prompt need-satisfied individuals to attempt to more strongly appreciate the precious beauty of the world, becoming motivated to explore the rich tapestry of experience that life has to offer. Indeed, death reminders led individuals with high- but not low-felt need satisfaction to report increased social, cultural, and intellectual exploration motivation and a stronger perception that life is meaningful [93].

Although the above discussion illustrates one way that defensive terror management processes can be balanced alongside growth orientations, a paradoxical dialectic often exists that pits security against openness and growth [67]. On one hand, open-minded exploration can lead to encounters with potentially threatening or unsettling information about oneself or one's beliefs, undermining the security that might be otherwise gleaned from one's existing psychological structures. On the other hand, though open-minded and integrative processing typically occurs when individuals feel a sense of security, such security can often be obtained by clinging to familiar understandings of oneself and one's world—by reaffirming familiar sources of self-esteem and dogmatically defending familiar worldviews. Of course, seeking security in familiar, well-structured modes of living prevents the individual from the opportunity to explore and integrate new information and experiences—to grow the self. Thus, integrative growth and exploration can sometimes threaten security, and security motivation can sometimes lead to conditions that undermine personal growth. Nevertheless, the above-mentioned work [92,93] illustrates that existential defense and growth orientations can be aligned and in balance with each other.

6.2. Death Awareness as Fuel for Creativity, Exploration, and Cognitive Flexibility

As an example of one such dialectic mentioned above, a growing body of research suggests that people often seek security from existential threats in their extant social relationships and cultural belief systems ([2] for review). Such findings suggest that the awareness of death motivates people to seek comfort in familiar psychological structures and prevents them from exploring or trying new things. However, recent work suggests that terror management processes can also prompt creativity and innovation beyond the familiarity of one's extant group or beliefs. Creativity is characterized by fresh and original perspectives and reflects personal growth and technical expertise [94–96]. However, it also often involves diverging from familiar norms, people, beliefs, or methods [95,97,98], potentially undermining the existential security of one's social ties [5,99]. This conflict is highlighted in a strong theoretical tradition which notes that people are strongly motivated to maintain both their individuality and their social and cultural connections [5,87,88,99–101]. Thus, the awareness of death can trigger dual motives to be a unique individual, yet similar enough to others to be safely protected by one's cultural ties. Indeed, when participants were made to feel like conformists, MS reduced these similarity

ratings. However, when made to feel like cultural deviants, MS increased people's perceptions of similarity to others [102].

On the one hand, creative expression may produce a sense of guilt because it individuates people from familiar people or beliefs [99]. Indeed, engaging in a creative task after MS increased both guilt and projections of social similarity [103]. On the other hand, such effects can be attenuated or even reversed if the creative act maintains a sense of social connectedness [104]. For example, although MS reduced individual-oriented creativity, it did not reduce community-oriented creativity [105]. Terror management processes can also, under certain circumstances, lead to the exploration of novel ideas and experiences. Specifically, when in a creative mindset, MS enhanced social, intellectual, and environmental exploration, as well as the exploration of alternative secular and religious cultural worldviews [106,107]. These findings point to the role of creative mindsets in the facilitation of open-minded and flexible terror management processes.

From another angle, the role of cognitive flexibility in terror management-induced personal growth and well-being has been explored via variation in identity hybridity and personal need for structure (PNS) [108,109]. Whereas people higher in PNS prefer that their social surroundings be rigidly structured, familiar, and certain, those with lower PNS tend to flexibly organize and integrate complex social information, and seek novel experiences and new information. Such differences in PNS suggest that individuals may derive their sense of meaning in life through different channels. That is, individuals with lower (*vs.* higher) PNS may derive meaning through the exploration of novel information and social structures. Indeed, whereas MS led individuals with low hybridity to seek cultural familiarity, it led individuals with greater hybridity (e.g., people with bicultural identities) to seek novel cultural experiences [110]. Death reminders have also been shown to motivate those with low PNS to seek novel experiences in an effort to experience a sense of meaning in life. After MS, participants low in PNS tended to be more open-minded regarding violations of the just-world assumption ([111], Study 5), preferred a more flexible self-concept ([112], Study 1), and became more interested in exploring novel social, intellectual, and environmental stimuli [113]. Thus, terror management processes can move creative or cognitively flexible individuals along a trajectory toward personal growth and cultural enrichment.

7. The Impact of Direct Confrontations with Death

The above discussions have dealt with the consequences of the more subtle and non-conscious awareness of mortality. Terror management processes are thought to operate on a continual basis, given an ever-present awareness of mortality, and subtle reminders of death (e.g., MS manipulations) to simply magnify those processes so they can be observed. However, of course, people also confront death in a number of direct and explicit ways: from idle musings and discussion, to careful and planned meditations, to encounters that bring us nearer to death itself (terminal diagnoses, aging, violence, natural disaster). The relationship between the more intense existential experiences and TMT has yet to be fully understood. However, at the moment, there are several points of intersection that suggest the possibility that particularly acute awareness of or confrontation with death can sometimes lead to more positive and growth-oriented endeavors.

Additionally, events can occur that prompt direct and intense contemplation of mortality. These more intense encounters can potentially pose stronger challenges to one's terror management structures, potentially motivating stronger and perhaps even more deliberate efforts to shore up one's buffering systems. On that point, it is illustrative to note that a foundational lesson learned from cognitive dissonance research [114] was that the magnitude of the discrepancy between cognitions (attitudes, goals, motives, *etc.*) determines the magnitude (strength) of the required dissonance reduction efforts. Although one might be able to bring smaller discrepancies into consonance with correspondingly subtle changes in cognitions or behaviors, major discrepancies often require correspondingly stronger and persistent efforts to create consonant behaviors or cognitions. Similarly, the basic drive to survive is dissonant with the awareness of mortality, and the greater the magnitude of that existential dissonance, the greater the efforts necessary to restore consonance.

Because people are typically socialized to internalize their cultures' value and meaning systems, subtle reminders of death (e.g., MS manipulations) can be managed by subtly adjusting one's behaviors to bolster one's perceived value within one's permanence-promising worldview. However, terminal illness, aging, and other life threatening events may force a greater magnitude of awareness of death and pose a greater magnitude of challenge to one's terror management system. On the one hand, an anxiety buffer disruption can leave people exposed to potentially harmful existential anxiety and associated disorders until those buffers are repaired [115,116]. For example, exposure to traumatic events such as a natural disaster, severe medical conditions, or assault increases the risk of debilitating anxiety disorders, such as post-traumatic stress disorder [117,118]. Additionally, emerging research suggests that such outcomes result, at least in part, because traumatic experiences disrupt individuals' terror management buffers [115,116,119,120].

However, the more intense existential experiences might also set the stage for personal growth, as the motivation to placate existential anxiety potentially leads people to revise and restructure their terror management system values. Direct, conscious deliberations about existential experiences may lead to positive adjustments in people's goals and values (e.g., personal growth, prosocial interactions, intrinsically meaningful goal shifts), restructuring their personal and social foundations in order to better maintain an intrinsically sustainable sense of what constitutes a significant and meaningful life. Consistent with this, Kosloff and Greenberg [121] found that conscious death thoughts (*i.e.*, no delay after MS) led participants to devalue extrinsic goals, such as wealth and fame. Further, non-conscious terror management processes might lead to more enriching and prosocial outcomes to the extent that direct existential encounters cause people to restructure their value systems away from their newly challenged, culturally dictated goals (e.g., wealth, fame, physical attractiveness) and toward more intrinsically meaningful and satisfying goals (e.g., growth, social connectedness, community).

For example, traumatic experiences and other anxiety buffer disruptions can sometimes produce the opportunity for what is often construed as post-traumatic growth (PTG) ([122,123]; [124] for review). PTG stems from the use of social coping resources and cognitive coping strategies to both make sense of one's experience and restructure an effective and meaningful view of the world [125,126]. When such resources or coping strategies are not perceived or are unavailable, however, people may continue to experience post-traumatic stress [125]. However, in line with conscious terror management processes, attending to an existentially threatening experience may lead individuals to productively cope when individuals can perceive and can make use of resources that would allow them to restructure their core

values and beliefs about the world, growing in ways that would offer renewed meaning in life and life satisfaction [123,127].

Similar insights can also be gleaned from work on so-called "near-death experiences" (NDEs) [128–130], in which people reportedly perceive themselves to be out-of-body and on the brink of "crossing over" to death. Although it must be noted that there are numerous problems with NDE definitions being biased to characterize primarily religious, positive, and/or growth-oriented experiences [131], and an underreporting of unpleasant near-death experiences [132], NDEs are often reported to produce a new appreciation for life, increased care for others, and a reduced interest in material and social status (e.g., [133–136]). Experimental research [137] has also explored how NDE-related goal orientations affect self-enhancing *vs.* prosocial behavior. In those studies, among participants with initially stronger extrinsic (culturally dictated) goal orientations, the number of raffle tickets (good for a chance to win $100) taken from a limited public supply was increased in an MS condition, but not in a death reflection (based on anecdotal reports of NDEs) condition. Thus, the reflections on death that reportedly produce positive life changes following NDEs appear to produce a shift away from what would otherwise be an increased pursuit of extrinsic, culturally dictated goals.

However, the "death reflection" condition used in [137] was multifaceted. In addition to visualizing their own death in detail, participants in the death reflection condition were also asked to (1) adopt a limited time perspective by imagining how they would handle their final moments; (2) engage in a life-review; and (3) do a perspective-taking exercise about the impact their death would have on their family. These other dimensions could have been responsible for the mitigation of the otherwise-observed MS effects. In light of this and issues with the other related work in the NDE literature (correlational data and self-reports of growth), the extent to which deeper contemplation of death leads to enduring positive outcomes is in need of further research.

One effect of direct contemplation of death, whether via traumatic experiences, NDEs, or during the course of normal aging, or otherwise, may be that people come to recognize their future as particularly limited. Awareness of the impending end of one's life may cause people to shift their defensive efforts away from self-enhancement and toward maintaining meaningful and positive social connections [138]. One way to understand that shift in goals comes from socioemotional selectivity theory (SST) [138,139], which proposes that when people adopt a limited-time perspective, they tend to emphasize their more positive interpersonal experiences in the present over negative experiences that serve longer-term goals. For example, as people grow older, this limited-time perspective becomes more dominant/salient and middle-aged and older adults tend to express less concern for self-enhancement and more concern for others [140,141]. Thus, Maxfield *et al.* [142] found that, whereas younger adults reminded of death display a harsh defense of their moral code, older adults are more forgiving of moral transgressors after MS[1]. Using an experimental manipulation of the limited-time perspective, Cozzolino *et al.* ([143], Study 2) found that although a death reminder on its own increased self-indulgent raffle-ticket-taking (an expression of the extrinsic goal toward materialism), that increase did not occur when participants were also asked to think about being in life's "final stage". Thus, confronting mortality in ways that prompt a limited-time perspective might shift goal orientations toward positive social interactions

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[1]   Note, however, that in the control conditions the older participants were harsher than the younger participants, which is not compatible with SST.

(e.g., forgiveness, reduced greed) rather than self-enhancing goals toward materialism or harsh cultural worldview defense.

8. Conclusions

Much research has revealed the dark side of death awareness; TMT can explain the motivational issues underlying the "dark side" of social psychological phenomena [2,144]. However, the awareness of mortality is not a unidimensionally negative motivational force. By taking an appreciative approach [145,146], keeping the broader scope of TMT in perspective, we have pointed out that death awareness can also, at least under certain conditions, function to fuel more positive motivational trajectories. We noted how conscious death awareness can motivate enhancement of physical health, how non-conscious awareness of mortality can motivate people to live up to prosocial and otherwise helpful standards and beliefs; foster loving relationships, encourage community involvement, and support intergroup peacebuilding; and foster certain self-enriching behaviors, such as creative expression or the exploration of novelty. Finally, we also considered tentative implications of more direct confrontations with death, including the potential for personal growth and shifts in prosocial goal orientations. Together, these discussions and research findings illustrate the bright side of the existential coin: that death awareness can and does motivate some rather positive personal and social consequences.

Author Contributions

Kenneth Vail and Jacob Juhl have been conducting research on existential motivation over the past several years and each contributed to the content as well as the structure of this paper.

Conflicts of Interest

The authors declare no conflict of interest.

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