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To Live is to Die: The Effect of Mortality Salience on Memory and Fear of Death

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Abstract

Terror Management Theory proposes that the threat of death produces existential terror, which accentuates the need for security. This effect of mortality salience—awareness of death—is well documented for non-conscious thoughts of death (Martens, Burke, Schimel, & Faucher, 2011). The objective of this study, then, is to measure anxiety—or fear of death—in reaction to non-conscious as well as conscious thoughts of death by manipulating the valence (positive vs. negative) and content (death vs. non-death) of a story that participants read. I measured any changes reported in fear of death before and after reading the story. Participants also wrote about their first realization of death after making their second fear-of-death rating. Next, they completed the fear-of-death questionnaire a third time. Lastly, participants completed a recognition test after the third questionnaire, measuring their memory for the story read earlier in the study. This assessed whether mortality salience had an effect on memory (Greenberg, Martens, Jonas, Eisenstadt, Pyszczynski, & Solomon, 2003). Seventy-one undergraduate students participated in the study. There was not a significant effect of mortality salience on memory; however, results showed a significant decrease in fear of death after participants wrote about their first realization of death as well as a marginally significant effect of content such that participants in the non-death conditions had higher fear of death ratings than participants in the death conditions. Mortality salience, in the form of an explicit, personal reflection on death, significantly decreased fear of death. This suggests that mere awareness of death may not incite anxiety; instead, mere exposure to and reflection on death reduces fear, or anxiety. These results are inconsistent with Terror Management Theory, and their implications are explored.

To Live is to Die: The Effect of Mortality Salience on Memory and Fear of Death

A Thesis

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Tony Bergamini

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To Live is to Die: The Effect of Mortality Salience on Memory and Fear of Death

In his book entitled, *The Denial of Death*, Becker (1973) proposed a theory of death that would later become known as Terror Management Theory (Solomon, Greenberg, & Pyszczynski, 2004). His viewpoint as a cultural anthropologist described death as an anxiety-provoking event. He theorized that the prospect of one's physical annihilation should produce an existential terror. He argued that the terror of death posits a profound, subconscious anxiety. This anxiety spurs a conscious attempt by humans to make sense of death; however, because the idea of death is ultimately a metaphysical concept, humans tend to placate the concept of death outside of our conscious awareness—in essence, humans tend to deny death. In fact, Becker argued that most human action is taken in order to ignore or avoid the inevitability of death. In conjunction with Becker's theory, Terror Management Theory (TMT) arose as a psychological science in order to investigate Becker's claims. Greenberg, Pyszczynski, and Soloman (1990) integrated as well as expanded Becker's idea of death anxiety. They proposed that humans are motivated to suppress the potential for terror, or anxiety, associated with mortality by investing in cultural belief systems (i.e., worldviews) that imbue the world with meaning. The meaning that individuals obtain when believing in particular worldviews also provides them with significance, or self-esteem (Cox & Arndt, 2008). This significance is attributed to the symbols that define cultural belief systems so that a representation of continuity can be realized. But whenever one is reminded of death and its discontinuity, one automatically reinforces one's particular symbols as a way to reduce the anxiety of death (Pyszczynski Greenberg, Solomon, Arndt, & Schimel, 2004). Consequently, a defense mechanism, or anxiety buffer, is established.

Under TMT, the awareness of one's death is referred to as Mortality Salience (MS). This concept focuses upon death-related anxiety and its effect on people's lives. Previous research has indicated that MS affects a wide range of activities (Greenberg *et al.*, 2003). It can affect the decision making of groups and individuals as well as one's adherence to a worldview; it can affect one's prejudice, materialism, and patriotism as well as one's inclination to charitable behaviors and other altruistic behaviors (Pyszczynski, Solomon, & Greenberg, 2003). Previous research has also indicated that TMT is mostly defined and assessed through MS. A meta-analysis revealed that 83% of the articles reviewed, according to their criteria, concerning TMT tested the MS hypothesis (Burke, Martens, & Faucher, 2010).

The MS hypothesis is predicated upon the distinction between the literal and symbolic immortality that worldviews impose. It is not immortality itself that matters, for humans understand the inevitability of death; rather, it is the means by which people believe in immortality (i.e., self-esteem and worldviews) that is important. Literal immortality entails the belief in the afterlife or participation in religious rituals concerning the dead whereas symbolic immortality entails self-esteem striving (Dechesne, Arndt, Ransom, Sheldon, Pyszczynski, Van Knippenberg, & Janssen, 2003). Self-esteem striving is defined as the means by which value or worth is ascertained by an individual, forming a sense of permanence. Self-esteem, then, entails the analysis of the validity of one's cultural worldview, determining whether or not one is living up to his or her standard. This analysis allows one to confirm or deny his or her value or worth in accordance to a particular situation. The individual is able to improve or solidify one's self-esteem on the basis of this analysis. Essentially, self-esteem striving reinforces or

improves one's subjective cultural belief system (Pyszczynski *et al.*, 2004). In general, individuals believe in some form of literal immortality while pursuing symbolic immortality (Dechesne *et al.*, 2003). Whether literal or symbolic, immortality is a relational concept within a cultural belief system; and culture generally entails an implicit recognition that we are part of something bigger. Immortality, then, serves as a way for humans to directly defend against death by assuming that we are individual, smaller pieces of a bigger puzzle. It allows individuals to mentally escape solitary, physical annihilation.

The conjecture of literal and symbolic immortality, then, serves as a plausible defense against the idea of death. However, previous research on TMT through the MS hypothesis suggests that we mostly use a distal defense against thoughts of death (Burke, Martens, & Faucher, 2010). A distal defense primarily occurs whenever thoughts of death are non-conscious but accessible. Thoughts of death are on the border of consciousness but not in current focal attention (Martens *et al.*, 2011). The effects of MS are strongest whenever distal defenses are employed; its effect on behavior is most easily observed after a brief delay. Notwithstanding, a more proximal defense can be employed. When directly confronted with thoughts of death, individuals react with a proximal defense in which people tend to react in a more rational manner. Proximal defenses are interpreted as more rational because distal defenses invoke a significant increase in worldview defense as well as self-esteem striving. This reaction creates an anxiety buffer against the thought of death, which effectively causes the individual to cling to one's in-group while ostracizing out-groups. One's inclusivity becomes closed to outsiders due to one's distal defense reaction to death-related thoughts. Therefore, the distal defense reinforces

cultural exclusivity while the proximal defense avoids this tendency (Burke, Martens, & Faucher, 2010).

The distal defense reaction has real world implications. For example, when George W. Bush was President after the September 11th attacks, his approval rating jumped 50%, indicating that the thought of death spurred U.S. Americans to cling to their in-group. The anxiety and fear from the attack increased the need for a buffer against thoughts of death; consequently, U.S. Americans increased their nationalism and patriotism in order to cope with these threats of death (Pyszczynski, Solomon, & Greenberg, 2003). In fact, MS effects are strongest—whether positive or negative—towards a particular person. Accordingly, societal leaders are often the most salient targets of the death anxiety buffer, for they represent worldviews (Cohen Solomon, Maxfield, Pyszczynski, & Greenberg, 2004).

This example of a societal response to thoughts of death provides another distinction within MS: societal vs. individual responses to death. On the societal level, people tend to reward certain attributes and punish other attributes within the confines of a worldview. When thoughts of death indirectly affect a society, then conformity to that society's worldview will be rewarded whereas dissident behavior will be punished. MS effects on a societal level concern worldviews (Renkema, Stapel, & Van Yperen, 2008). However, on the individual level, self-esteem striving typically provides the buffer against death-related anxiety. If one experiences death-related anxiety, one usually adheres to personal values, ostracizing other values. Individuals focus on their own worldview rather than on society's worldview. For example, previous research on the effectiveness of anti-smoking campaigns often includes thoughts about death.

Advertisements may show a cancerous lung in order to invoke the idea of lung disease and its connection with death. However, studies have shown that using death threats in order to prevent smoking may not be most effective (Cox, Goldenberg, Vess, Routledge, Cooper, & Cohen, 2009). Instead, studies have indicated that using self-esteem threats have a greater effect. TMT theorists attribute this result to anxiety buffers (Arndt *et al.*, 2009). Because smokers often have positive attitudes towards smoking, their positivity serves as a buffer against death-related thoughts. As MS predicts, smokers use positive thoughts towards smoking in order to compromise the thought of death that smoking advertisements may invoke (Jessop Albery, Rutter, & Garrod, 2008). The threat of death, then, simply evokes one's positive attitude towards smoking. This distal defense merely reinforces one's particular worldview. Consequently, death threats can actually evoke a more positive outlook on the behavior of smoking. As this example displays, self-esteem defines individual reactions to mortality salience.

Subsequently, MS can be defined through different measures: literal vs. symbolic immortality, distal vs. proximal defense, and societal vs. individual buffers. Despite the variety of measures with which MS can be attained, the literature overwhelmingly supports the distal defense of symbolic immortality, which incorporates societal and individual buffers (Burke, Martens, & Faucher, 2010). The tendency towards the distal defense indicates thoughts of death are usually outside of consciousness but accessible. It shows that thoughts of death mostly concern symbols within a particular culture; and the buffer used against these thoughts of death can be implemented individually or by society as a whole.

In general, TMT possesses a specific function within society, and it is robust. The aforementioned meta-analysis concluded that MS is in the top quartile of effects for psychological theories. Furthermore, MS is in the 80th percentile of effects for theories in personality and social psychology, in particular. The meta-analysis indicated that there was neither a publication bias nor a moderation of MS effects by sample size (Burke, Martens, & Faucher, 2010). Moreover, another meta-analysis by the founders of TMT indicated that different methods for priming MS elicit similar distal effects; and when priming MS along with non-death topics of similar characteristics such as pain, social rejection, etc., MS elicits significantly different effects, which denotes discriminate validity for MS. Furthermore, similar distal effects could even be found in different cultures, or populations, denoting convergent validity for MS (Solomon, Greenberg, & Pyszczynski, 2004). Clearly, MS is a legitimate avenue with which to investigate TMT.

In my experiment, I attempted to analyze TMT through MS by employing a novel experimental design. I sought to analyze the effects of MS on memory and fear of death. For fear of death, I utilized symbolic immortality through distal and proximal defenses, incorporating individual buffers in order to measure how MS—awareness of death— would affect fear of death ratings. I analyzed the distal defense by having participants read either a positive or negative story that either was or was not about the death of the fictional character, Creon (Buxton, 1984). I analyzed the proximal defense by asking participants to write about their first realization of existential terror—that they, themselves, would die. The study directly assessed death-related anxiety, using questionnaires to measure fear of death. Accordingly, for the distal defense, I predicted that the negative story about death would produce the greatest change in fear of death

whereas the positive story not about death would produce the smallest change in fear of death. Consistent with TMT, I thought that negative thoughts about death would produce the greatest anxiety. The negative story about death would trigger negative emotions in conjunction with the subject of death whereas the positive story not about death would neither trigger negative emotions nor the subject of death. For the proximal defense, I predicted that the writing prompt about existential terror would trigger a fear of death similar to the negative story about death; however, because this exercise involves a proximal defense, I hypothesized that a more rational reaction would yield less fear of death than the negative story about death. Because previous research has shown that college students are more prone to MS effects, I predicted that these results would be very significant (Burke, Martens, & Faucher, 2010). Consequently, I hypothesized that the part of the study concerned with fear of death would achieve results consistent with TMT.

The part of the study concerning memory attempted to discover whether or not TMT affected memory—more specifically, the accuracy of and confidence in recognition—through distal means. TMT and MS have been shown to affect a wide range of behaviors (Greenberg *et al.*, 2003). However, research had yet to be conducted—to the best of my knowledge—on the effect of MS on memory. Thus, I evaluated a previously unevaluated topic within TMT and MS. Previous research outside of TMT has shown that emotional memories are often better recalled than non-emotional memories (Hamann, 2001). The stimuli from these experiences engage specific cognitive and neural mechanisms: the amygdala enhances explicit memory for both pleasant and unpleasant stimuli, for it processes biologically and personally relevant stimuli (Schultz, Casto, &

Bertolucci, 2009). In fact, there is a benefit in declarative memory when the amygdala can strengthen a particular memory; however, it may also compromise the accuracy of the memory. Thus, there is a caveat involved with arousal. Some arousal enhances explicit memory, but excessive arousal impairs it, especially in conditions of high stress (Hamann, 2001). In order to address this issue, Mather and Sutherland (2011) developed the arousal-biased competition theory in which arousal can impair or enhance memory. The mind engages in a competition over what aspect to focus on when in a high arousal situation—a process called memory narrowing. High priority items, then, tend to win the competition of mental resources.

For memory, previous research has also shown that negative emotions enhance perceptual memory but impair semantic processing whereas positive emotions enhance semantic and conceptual processing. Subsequently, our mind reacts to highly aroused, negative emotions by remembering the perception of the event—not necessarily the facts surrounding the event (Mather & Sutherland, 2011). Furthermore, the fading affect bias has shown that negative reactions fade more quickly than positive reactions, implying that we tend to remember more positively-valenced events (Szpunar *et al.*, 2011). Because death is an anxiety-provoking thought, I hypothesized that the thought of death would be a highly arousing, high priority item. Moreover, my experiment involved a delayed memory test, meaning that the high aroused, negative emotions of death would result in a significant decrease in memory accuracy scores. Thus, because positive events tend to be remembered with greater confidence in comparison to negative events, I predicted that the negative story about death would be remembered the least with the

least amount of confidence and the positive story not about death would be remembered the best with highest confidence.

The objective of this study was to directly measure fear of death through distal and proximal defenses as well as explore the previously unevaluated effect of MS on memory.

Method

Participants

Seven-one undergraduate students were recruited from lower level psychology courses at Butler University. Students received extra credit at the discretion of their professors for a particular course. There were no restrictions based on race or gender. Participants were randomly assigned to one of four conditions: a positive death story, a positive non-death story, a negative death story, or a negative non-death story.

Design

A 2 x 2 between-participants factorial design was used in this study, with content (death vs. non-death) and valence (positive vs. negative) as independent variables. The dependent variables were fear of death, reading comprehension accuracy, and reading comprehension confidence.

Materials

Stories. The stories were created based on the ancient myth of Creon (Buxton, 1984). The researcher wrote each story. The valence and content of each story was manipulated in the opening and closing paragraphs. The opening paragraph foreshadowed the valence of the story—whether it was positive or negative; and the closing paragraph confirmed the content of the story—whether it contained death or non-

death. Each story was similar in word count so that the length of the story would not have a disproportionate effect.

Questionnaires. Fear of death scores were based on a five-point fear of death scale (See Appendix A). The three questionnaires each contained 25 questions. For each questionnaire, 10 questions concerned fear of death, using a statistically valid measure from previous research (Templer, 1970). The researcher created the other 15 questions, which were not used in data analysis; these questions concerned different aspects of personality, religiosity, values, etc.

Recognition Test. Reading comprehension scores were based on a four-option, multiple-choice, recognition test and a four-point confidence scale (See Appendix B).The researcher developed the 10-question, multiple choice recognition test as an assessment of memory. Each question concerned an aspect of the story that every participant read—i.e., no questions concerned the opening or closing paragraph.

Procedure

Participants first completed the informed consent agreement. The researcher informed the participant that all directions would be given on the packet, and participants could proceed at their own pace. Participants were deceived about the purpose of this experiment so that awareness of death could be distally assessed. Participants were told that the researcher was investigating a person's memory in relation to certain aspects of a person (personality, religiosity, values, etc.). An outline was provided such that each participant knew he or she might be asked to recall a negative, vivid memory. The researcher acknowledged the potential mental risks of conjuring or recalling unsettling thoughts through a negative, vivid memory. Therefore, it was indicated that the exact purpose of providing the vivid memory would be provided upon completion.

Participants began the experiment by choosing a packet haphazardly set out on a table at the front of the room. The instructions at the top of the packet instructed participants to complete questionnaire 1, establishing a baseline fear of death. Once this questionnaire was finished, participants were then instructed to carefully read a three-page story. This story was either concerned a positive death, a negative death, a positive non-death, or a negative non-death. After reading the story, participants completed questionnaire 2. After finishing questionnaire 2, participants were asked to take a moment in order to reflect on the first experience they have ever had with the idea of death. After a brief, self-paced pause, participants were asked to write about a particular vivid memory: participants' first realization of death. Participants were invited to explain their first existential realization that everyone will eventually die, including themselves. General examples of such instances were provided: funerals, movies, accidents, etc. Participants could write as much or as little as they wished. Following their writing sample, participants then completed questionnaire 3. Upon completion of questionnaire 3, participants were instructed to return the packet to the researcher so that the researcher could provide further instructions. After the packet was returned, the researcher gave each participant the multiple-choice recognition test. This was done so that participants could not review the story while completing the test. The multiple-choice recognition test provided four options for each question as well as a confidence rating for each question. The confidence scale ranged from "Not at all confident," which equated to a "1," to "Very confident," which equated to a "4," utilizing a four-point scale. Finally, participants turned in the recognition test.

Upon completing the experiment, participants were thanked for their participation. They were then fully debriefed about the true purpose of the study. The participants were given a handout with the researcher's and research advisor's contact information as well as

contact information for the Butler University Counseling and Consultation Services. Lastly, a citation was provided at the bottom of the handout in order to suggest possible benefits of one's awareness of death in preventing post-traumatic stress disorder (Abdollahi, Pyszczynski, Maxfield, & Luszczynska, 2011).

Results

Fear of Death

Table 1 displays mean fear of death ratings as a function of story content and valence. I submitted fear of death scores to a 2 x 2 x 3 multivariate analysis of variance (MANOVA) with content (death vs. non-death) and valence (positive vs. negative) as between-participants variables and fear of death rating (questionnaire 1 vs. questionnaire 2 vs. questionnaire 3) as a within-participants variable. Results indicated a marginally significant main effect of content such that average fear of death ratings were higher in the non-death conditions ($M = 2.93$; $SD = 0.65$) than in the death conditions ($M = 2.66$, $SD = 0.64$), $F(1, 67) = 3.56$, $MSE = 1.02$, $p = .064$, $\eta^2 = .05$. Neither the main effect of valence, $F(1, 67) = 0.44$, $MSE = 1.02$, $p = .511$, $\eta^2 = .01$, nor the content x valence interaction were statistically significant, $F(1, 67) = 1.13$, $MSE = 1.02$, $p = .292$, $\eta^2 = .02$. The MANOVA also revealed a main effect of fear of death rating, $F(2, 66) = 36.50$, $p < .001$, $\eta^2 = .53$, Wilks' $\lambda = .475$. Follow-up analyses demonstrated that fear of death significantly declined across questionnaires.

Figure 1 displays mean fear of death ratings at three separate times. A paired samples t-test between questionnaire 1 and questionnaire 3 revealed a statistically significant decrease in fear of death ($M_{Q1} = 2.95$; $SD = 0.78$; $M_{Q3} = 2.97$; $SD = 0.61$), $t(70) = 7.12$, p < .001. From questionnaire 2 to questionnaire 3, there was also a statistically significant decrease in fear of death ($M_{Q2} = 2.97$; $SD = 0.61$; $M_{Q3} = 2.47$; $SD = 0.58$), $t(70) = 7.99$, $p < .001$. However, from questionnaire 1 to questionnaire 2, there was not a

statistically significant change in fear of death (M_{Q1}= 2.95; SD = 0.78; M_{Q2}= 2.97; SD = 0.61), t (70) = -0.50, p=.616. Neither the fear of death rating x content interaction, F (2, 66) = 1.93, MSE = 0.13, p = 0.15, η^2 = .055, Wilks' λ = 0.945, the fear of death rating x valence interaction, F (2, 66) = 1.86, MSE = 0.13, p = 0.16, η^2 = .053, Wilks' λ = 0.947, nor the fear of death rating x content x valence interaction, F (2, 66) = 0.75, MSE = 0.13, p = 0.48, η^2 = .022, Wilks' λ = 0.978, was significant. In summary, the fear of death ratings suggest that fear of death can be reduced in two ways: reading a story about death (as compared to a story not about death) or writing about death. Therefore, when one is exposed to or reflects upon death, fear of death tends to decrease.

Reading Comprehension

Table 2 displays mean reading comprehension accuracy and confidence as a function of content and valence. I submitted mean scores on the reading comprehension test to a 2 x 2 x 2 multivariate analysis of variance (MANOVA) with content (death vs. non-death) and valence (negative vs. positive) as between-participants variables and reading comprehension score type (accuracy vs. confidence) as a within-participants variable. Results indicated that there was not a significant effect of mortality salience on memory; that is, there was no main effect of content, F (1, 67) = 0.13, MSE = 0.03, p = 0.72, η^2 = .002. There was neither the main effect of valence, F (1, 67) = 0.17, MSE = 0.03, p = 0.68, η^2 = .002, nor the content x valence interaction, F (1, 67) = 0.65, MSE = 0.03, p = 0.42, η^2 = .010. There was no main effect of reading comprehension score type for accuracy (M = 0.85; SD = 0.15) and confidence (M = 0.84; SD = 0.12), F (1, 67) = 0.05, MSE = 0.01, p = 0.83, η^2 = .001, Wilks' λ = 0.999. Neither the reading comprehension score type x content interaction, F (1, 67) = 0.19, MSE = 0.01, p = 0.66, η^2 = .003, Wilks' λ = 0.997, the reading comprehension score type x valence interaction, F (1, 67) = 0.00, MSE = 0.01, p = 0.99, η^2 = .000, Wilks' λ = 1.000, nor the reading comprehension score type x content x valence interaction, F (1, 67) =

0.04, *MSE* = 0.01, p = 0.85, η^2 = .001, Wilks' λ = 0.999, was significant. In summary, the idea

of death has no effect on recognition memory.

Discussion

The obtained MS results are neither consistent with TMT in terms of fear of death nor significant in terms of memory. In particular, this suggests that the accuracy and confidence of recognition memory are not behaviors that TMT affects. I propose three possible explanations. Firstly, it may be that the thought of death is not a highly arousing event. The distal defense against awareness of death implies that thoughts of death are outside of consciousness yet highly accessible. However, in being outside of consciousness, it could be that thoughts of death do not incorporate any excessive arousal. Rather, thoughts of death may simply entail some anxiety in which there would not be a significant, discriminative effect across conditions. Moreover, the effect of positively and negatively valenced stories may have contributed some arousal. Thus, each story entailed some arousal, and the levels of arousal for each story were not significantly discriminated. The lack of excessive arousal, then, created a situation in which some arousal, or anxiety, simply enhanced explicit memory across conditions. I suggest that future research determine a better estimate of the amount of anxiety that thoughts of death produce. Perhaps different physical and mental measures could be used to determine the average amount of anxiety that thoughts of death generate. This information could be used to predict the behaviors of MS that have been noted in the literature from distal defenses.

Secondly, it may be that the idea of death is not always a negative event that is feared. If this were the case, the positive and negative valence of each story would be placated by previously formulated, individual ideas of death. These ideas would either be positive, negative, or neutral by nature, nullifying my manipulation of valence. Subsequently, content—death vs. non-death—may not significantly affect memory. I suggest that future research analyze the valence of the idea of death that each person possesses. Thirdly, it may be that the proximal defense against thoughts of death may outweigh the distal defense. Because MS mainly affects the distal defense, I assessed the

accuracy and confidence of recognition memory with regards to the distal defense. However, because I proceeded to analyze the proximal defense against thoughts of death through the writing sample on existential terror, I could have compromised any potential distal MS effects. Consequently, the conscious consideration of the idea of death may have trumped any non-conscious effects. I suggest that future research addresses this problem by avoiding any conscious consideration of the idea of death. Additionally, I suggest that future research analyzes recall in order to determine whether or not the distal or proximal defenses have a significant effect on recall.

In analyzing fear of death, the obtained, significant results are not consistent with TMT. The significant decrease in fear of death due to conscious reflection on the idea of death was accompanied by a marginally significant decrease in fear of death due to exposure to the idea of death. Essentially, as participants were increasingly exposed to the idea of death, they came more comfortable with death and their fear decreased. This implies that the idea of death does not necessarily evoke anxiety. Rather, the idea of death may evoke greater comfort with the idea of existential terror. This fundamentally opposes TMT. Consequently, I will propose four plausible explanations for the results.

Firstly, these results may not fit within the TMT framework because fear itself may be a misnomer. People, in general, may not fear death. The existential terror of absolute annihilation may neither produce conscious anxiety nor immediately instigate non-conscious fear. Rather, the idea of death may simply be a concern, which is consciously addressed and reconciled. Secondly, it could be that the idea of death is part of the worldview that MS effects. The threat that produces anxiety, then, might not be of death but of a worldview or self-esteem collapse, which previous literature has addressed (van den Bos, Poortvliet, Maas, Miedema, & van den Ham, 2005). This proposes that the absolute annihilation, which TMT concerns, is not predicated upon physical death; instead, absolute

annihilation may primarily concern self-esteem collapse—the invalidation of one's particular worldview. The idea of death seems to be more of a mental barrier than a physical barrier, which has been shown to be resolved at an early age (Field, 2000). Not only does previous research support this claim, but the written sample on existential terror from this study also supports this claim. In analyzing the content of people's written responses to existential terror, the majority of these responses concerned a death of a close person or a family relative, which occurred during childhood. This experience solidified their view on death. The fear of death, then, is not a lifelong process of denial; rather, it is obstacle in which we intellectually engage—not avoid. Because the culture, in which most people are ingrained, substantiates our sense of self worth, people come to terms with our individual demise in recognition of the larger world. Therefore, by subsuming individual deaths into the society at large, people are able to come to terms with their mortality through the establishment of a particular worldview. However, whenever an individual's societal or personal worldviews are challenged by particular events or thoughts, then they must either defend or adjust their worldview. This, then, may better explain the phenomena captured by TMT as well as these results. Essentially, the manipulation from this study did not challenge their worldview; and when participants were asked to explain their worldview on death, they were empowered by their reflection. Adherence to worldviews, moreover, provides a possible account of the behavior of martyrs. People die for ideals within a particular worldview because it legitimately is more important than their physical annihilation.

Thirdly, it might be the case that the idea of death itself serves as a buffer against self-esteem, or worldview, collapse. It is not just a concept within a worldview; it is a concept used to defend one's worldview. In contemplating annihilation, people seem to jump a hurdle of uncertainty. People individually reconcile the fleeting nature of life in

order to drive themselves towards affirming their particular worldview. As mentioned earlier, people may not spend their lives avoiding the idea of death; rather, they may confront the idea of death at an early age, allowing them to spend the rest of their lives building, justifying, and adjusting self-esteem (Field, 2000). Fourthly, it could be the case that the proximal, conscious defense trumps the distal, non-conscious defense. TMT may be too reliant upon the non-conscious. Focusing on the non-conscious not only leads to conjecture on the true nature of TMT, but it also neglects the value of conscious reflection. The power of actively consolidating one's stance on the idea of death may nullify any non-conscious effects observed. Overall, I propose a paradigm shift within the theory of TMT in which the idea of death does not produce MS effects; rather, it is the potential for the destruction of one's worldview or self-esteem that causes anxiety, leading to the effects of MS. TMT may invest too much into the denial of death. Therefore, it seems that this theory may not adequately address the phenomena that MS effects have observed.

Accordingly, the Terror Management Health Model, which was developed by Goldenberg (2008), may better fit these results. This model suggests that thoughts of death can empower the self; death is not considered a threat. In fact, thoughts of death become purposeful in order to assure the longevity of one's life. For instance, one proposition within this theory suggests that conscious thoughts of death spur health oriented responses, which assuages any potential anxiety about death. This behavior can be seen in women seeking breast examinations, for they consciously consider death before acting in order to address this possibility. They attempt to confront the potential for death (i.e., breast cancer) so that they may assure a longer life (Goldenberg & Arndt, 2008). Additionally, this model suggests that when the idea of death is primed, individuals will tend to act in accordance with self-esteem and society's expectations—consistent with one's identity. Self-esteem, then, is a coping mechanism for non-conscious thoughts of death. Higher self-esteem equates to a

more positive attitude towards life, which serves as a buffer to death-related thoughts and activities. People with high-esteem, then, are able to deal with death-related without much anxiety, buffering potential anxiety by positively confirming their worldview. However, if one has a high level of self-consciousness, then one has an increased death cognition, which equates to a more negative outlook upon life. Therefore, these individuals will tend to react more strongly to the MS priming; they must react strongly to death-related thoughts if they are going to increase self-esteem in a positive manner (Hewstone. Rubin, & Willis, 2002). Depending on an individual's tendency towards high self-esteem or consciousness, people will react differently to non-conscious thoughts of death. Nonetheless, the general goal remains: to increase one's self-esteem in a positive manner.

In consideration of a different model of TMT, I will now recognize some other criticisms of TMT. Contrary to TMT, evolutionary psychologists assert that behaviors are selected in order to avoid situations leading to death. MS effects, then, ought to reflect adaptive responses to specific life threats rather than an unconscious attempt to avoid the realization of death. This criticism illuminates the illogical suggestion that humans non-consciously avoid thoughts of death, for this offers no evolutionary advantage for survival. The mere existence of an anxiety buffer against thoughts of death does not make evolutionary sense, for it would decrease survival. TMT theorists argue that existential terror gives rise to the potential for paralyzing terror; thus, it is advantageous. However, the awareness of death most likely would lead to specific goal-directed behaviors that would reduce the probability of dying (Buss, 1997). There is a distinction between the avoidance of death and the avoidance of the fear of death. Humans do not just want to make themselves feel safe; rather, humans want to be safe. Moreover, if self-esteem is to serve as a protection against anxiety, then TMT needs to account for the initial drop in self-esteem before inflation. It is apparent that self-esteem drops whenever thoughts of death are

initially primed; then, a boost in self-esteem occurs after a brief delay (Leary & Schreindorfer, 1997). Consequently, TMT should be able to explain this phenomenon, perhaps suggesting—as this paper has—that self-esteem dictates MS effects.

Henceforth, I suggest that future research look at the difference between the effects of non-conscious, death-related thoughts and conscious, existential thoughts. Perhaps this differentiation between conscious and non-conscious thoughts of death can distinguish the salience of each. Previous research has indicated that women may consciously fear death more than men. It has also been indicated that U.S. Americans fear death more than individuals in European or Asian countries (Burke, Martens, & Faucher, 2010). Therefore, I recommend that future research take this into account. Additionally, I recommend that future research observe the effect that conscious reflection on existential terror may have on behavior. Perhaps this research can mitigate the effect of non-conscious death-related thoughts in society. I also recommend that future research focus upon self-esteem in relation to MS. Perhaps a paradigm shift can be substantiated with data.

Previous research has suggested that MS effects can be attenuated or reversed by variables such as liberalism, tolerance, belief in symbolic immortality, secure attachment style, etc. (Burke, Martens, & Faucher, 2010). Thus, I suggest that future research look at this possibility in order to analyze its effect on conscious reflection about existential terror. Liberality and tolerance may be negatively correlated with explicit fear of death and/ or self-esteem collapse. Previous research has suggested that MS effects can be completely reversed if one's in-group includes all of humanity (Kugler & Cooper, 2010). Therefore, I suggest further research explore this idea in order to investigate the attenuation of non-conscious MS effects. Perhaps an all-encompassing in-group can alleviate any negative MS effects.

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Table 1

Fear of Death Scores as a Function of Content and Valence

| | | **Questionnaire 1** *Valence* | | **Questionnaire 2** *Valence* | | **Questionnaire 3** *Valence* | |
		Positive	Negative	Positive	Negative	Positive	Negative
	Death	2.62	2.88	2.65	3.06	2.38	2.42
Content							
	Non-Death	3.21	3.08	3.08	3.11	2.58	2.52

Table 2

Reading Comprehension Confidence Scores Proportions

		Accuracy		Confidence	
		Valence		*Valence*	
		Positive	Negative	Positive	Negative
Content	Death	.850	.835	.834	.829
	Non-Death	.828	.867	.833	.867

Figure 1

Mean Fear of Death Ratings
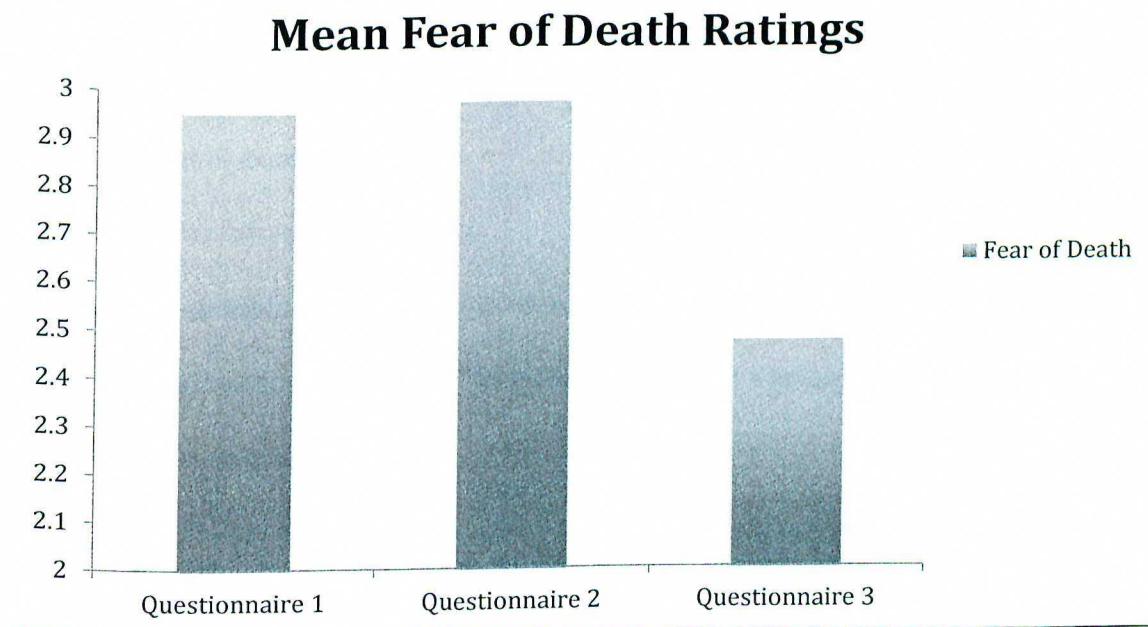
Appendix A

Directions: Please read the following statements and then circle the number of the response that best describes how you feel about the item.

1= Strongly Disagree   2= Disagree   3= Neutral   4= Agree   5= Strongly Agree

1. I am a deep, critical thinker.
   1   2   3   4   5
2. The thought of death troubles me.
   1   2   3   4   5
3. I am concerned about overpopulation.
   1   2   3   4   5
4. I support a woman's right to choose to have an abortion.
   1   2   3   4   5
5. It bothers me that I may die before I have done everything I wanted to do.
   1   2   3   4   5
6. I am happy right now.
   1   2   3   4   5
7. I worry that I may die at any moment.
   1   2   3   4   5
8. My aspirations are guided by my religious faith.
   1   2   3   4   5
9. I fear death.
   1   2   3   4   5
10. I am afraid of the dark.
   1   2   3   4   5
11. I often think about how short life really is.
   1   2   3   4   5
12. Nothing saddens me more than knowing my friends and relatives will eventually die.
   1   2   3   4   5
13. I believe in the existence of God.
   1   2   3   4   5
14. I consider myself to be future-oriented, meaning that I often focus upon the future rather than the present or past.
   1   2   3   4   5
15. I am afraid to die.
   1   2   3   4   5
16. Death marks the beginning of a new life.
   1   2   3   4   5
17. I am a person of faith.
   1   2   3   4   5
18. I do not like being alone.
   1   2   3   4   5
19. The thought of no longer existing bothers me.

        1   2   3   4   5

20. I often procrastinate.

        1   2   3   4   5

21. I tend to be a follower.

        1   2   3   4   5

22. Death makes me feel helpless.

        1   2   3   4   5

23. All fetuses should have a chance at life.

        1   2   3   4   5

24. I believe the preservation of life is more important than the conception of life.

        1   2   3   4   5

25. I am energized by the thought of new life.

        1   2   3   4   5

Appendix B

Recognition Test on the Story

1. Who is the 'accomplished and beloved King of Thebes' at the beginning of the story?
    A. Laius
    B. Tiresias
    C. Polybus
    D. Creon

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

2. How could the King of Thebes avoid the impending doom that the Oracle claimed was coming?
    A. The King of Thebes must investigate those closest to his throne
    B. The King of Thebes must give alms to his people
    C. The King of Thebes must indentify and expel the robber of the former King
    D. The King of Thebes must confront his uncle
    E.
How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

3. In what location was Laius robbed?
    A. A three-way crossroads
    B. Corinth
    C. The King's palace
    D. Polybus

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

4. On how many occasions does Creon talk to the Oracle in this story?
    A. 1
    B. 2.
    C. 3
    D. 4

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

5. Who robbed the King's caravan?
    A. Creon

B. A band of theives
C. Jacosta
D. Polybus

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

6. Who was the last contactable member of the caravan?
   A. Rochi
   B. The oracle
   C. Haemon
   D. A shepherd

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

7. What did Jacosta do in reaction to the stress of the situation?
   A. Attacked Creon
   B. Fled to a foreign land
   C. Had a seizure
   D. She did not have a reaction

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

8. When Laius was robbed, what was taken from him?
   A. The treasure of Thebes
   B. His journal
   C. The secret book of Thebes
   D. His personal belongings

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

9. Ultimately, who was the robber of the caravan?
   A. Jacosta
   B. Polybus
   C. Tiresias
   D. Creon

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident

10. Which sensory ability did Creon lose at the end of the story?

A. Hearing
B. Touch
C. Vision
D. Smell

How confident are you in this answer?

No confidence   Not very confident   Somewhat confident   Very Confident