ABSTRACT

The most commonly used mortality salience manipulation (Greenberg, Pyszczynski, & Solomon, 1986) asks participants to reflect on two questions, one about the emotions associated with the thought of death and the other about what happens after one dies. Two experiments separated these two questions and gave participants either one or a control question. In Experiment 1, participants who responded to the afterlife question suggested severer punishments towards moral transgressors compared to those who responded to the emotion or control question. Experiment 2 demonstrated that priming different worldview norms affects the presence of worldview defense only for those who responded to the emotion question. Overall, these results suggest that the two questions used in the common mortality salience manipulation are deferentially affected by worldview accessibility and produce different results when separated.

INDEX WORDS: terror management theory, mortality salience, worldview accessibility, worldview defense, moral transgressors
MORTALITY AND CULTURE: THE ROLE THAT WORLDVIEW ACCESSIBILITY PLAYS IN PRODUCING THE DEFENSIVE RESPONSES THAT FOLLOW MORTALITY REMINDERS

by

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CHAPTER 1
INTRODUCTION

Overview and Aims

Terror Management Theory (TMT; e.g., Greenberg, Pyszczynski, & Solomon, 1986) proposes that confronting one’s own mortality can lead to various negative outcomes. For example, TMT research demonstrates that people reminded of their own mortality display greater negative attitudes and behavior towards those they believe threaten or criticize their beliefs (e.g. Solomon, Greenberg, & Pyszczynski, 1991). In this paper, I propose that not all mortality reminders generate these negative outcomes. Specifically, I propose that negative outcomes will only occur for participants who respond to mortality reminders that also elicit cultural beliefs to become salient. In demonstrating this effect, I hope to elaborate further on what conditions produce typical TMT findings.

In making this argument, I begin by first discussing TMT and what outcomes they find as result of mortality reminders. Next, I discuss research that illustrates which factors influence and attenuate the outcome of worldview defense in response to mortality reminders. After that, I present research suggesting that a frequently used mortality salience manipulation, consisting of two open-ended questions, produces different outcomes when the questions are separately distributed. Finally, I propose two experiments that explore the role that salience of cultural worldview constructs plays in the relationship between reminders of death and worldview defense.
Terror Management Theory

TMT is a general theory of motivation in social psychology, inspired by the writings of Ernest Becker (1962, 1973, 1975; for a review of TMT see Solomon, Greenberg, & Pyszczynski, 2004). TMT proposes that like other animals, humans have an innate predisposition toward continued survival. However, unlike other animals, humans are unique because they are one of the only beings capable of recognizing they will eventually die. TMT proposes that the potential awareness of this paradox creates existential terror. To assuage this terror, humans have created cultural worldviews as a method for viewing themselves as important contributors to a meaningful reality. To defend themselves from the potential terror of death acknowledgement, humans attempt to live up to the standards of their personalized cultural worldviews. For example, one may believe that society thinks it is important to achieve a high level of education. By achieving a high level of education, this person has successfully lived up to their internalized worldview standards. Living up to these standards may confer benefits to the individual in the form of literal or symbolic immortality. Literal immortality comes in the form of believing that one will obtain a true afterlife by following the rules of one’s faith. Conversely, symbolic immortality reflects viewing oneself as being an important member of a culture that endures beyond one’s lifetime. The feeling that one has obtained either of these forms of immortality may lead to the belief that one has transcended death.

TMT further proposes that reminders of death, termed mortality salience, lead people to adhere to a personalized cultural worldview in attempt to quell this existential terror (Rosenblatt et. al., 1989). TMT also asserts that self-esteem, or the belief that one is meeting or exceeding the standards put forth by society, is another means by which people gauge whether they are living up to their cultural standards. They further postulate that this need for self-esteem is universal.
However, not all cultures share the same beliefs so individuals invest in adhering to an internalized conception of the standards and values prescribed by their own culture.

Numerous researchers have empirically tested the assumptions put forth by TMT. As such, they find that after mortality salience, people demonstrate positive reactions to those who support their personalized worldview, such as people displaying stereotypic behavior (Schimel et. al., 1999) and ideologically similar beliefs (Jonas & Greenberg, 2004). For example, Greenberg and colleagues (1990, Study 1) had Christian participants write about their own mortality or not. Next, they read questionnaires completed ostensibly by a person who was of Christian or Jewish faith. Their results indicate that compared to those who did not write about their own mortality, Christians who wrote about their own mortality demonstrated a larger preference for the questionnaire written by the Christian person and less preference for the questionnaire written by the Jewish person.

TMT research also demonstrates that following a mortality salience manipulation, participants display greater negative reactions, or worldview defense, to those who threaten their personalized worldview, such as those with anti-American sentiments (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992), alleged criminals (Arndt, Lieberman, Cook, & Solomon, 2005) and objects that remind them of the vulnerability of death (Cox, Goldenberg, Pyszczynski, & Weise, 2007). For example, McGregor and colleagues (1998) found that compared to a control group, participants whose mortality was salient were more likely to aggress towards another who attacked their political orientation. TMT explains that these results are attributed to the fact that the mere existence of different worldviews is fundamentally threatening to the belief that one’s worldview is the absolute truth. As such, after mortality
salience, people react to those who threaten their worldview by attempting to change their beliefs, or simply derogate them.

TMT asserts that this entire process occurs outside of people’s conscious awareness (Pyszczynski, Greenberg, & Solomon, 1999). Specifically, they postulate that conscious contemplation of death results in more proximal defenses, such as pushing death thoughts to the distant future or trying to deny one’s vulnerability to death. Conversely, more distal terror management defenses, such as worldview defense and self-esteem striving, occur when mortality reminders are on the cusp of one’s consciousness. Testing this assumption empirically, TMT researchers find that higher worldview defense outcomes are associated with mortality salience manipulations that produce high death though accessibility outside the realm of one’s consciousness. Researchers assess death thought accessibility by using measures that indirectly test the accessibility of death related thoughts (e.g., Arndt, Greenberg, & Cook, 2002; Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000). To achieve this effect, majority of TMT research features a delay between the mortality salience manipulation and their dependent measure. This delay allows death thoughts to move away from direct consciousness. The presence of high levels of death related accessibility during this delay has found to be associated with greater worldview defense on subsequent measures.

In addressing potential alternative explanations for their findings, TMT researchers have demonstrated that negative mood and anxiety cannot explain their results (e.g. Florian, & Mikulincer, 1997). Providing support for this argument, researchers demonstrate that mortality salience manipulations do not produce greater feelings of self-reported anxiety or negative affect compared to control conditions. Rosenblatt, Greenberg, Solomon, Pyszczynski and Lyon (1989) also demonstrate that physiological arousal or self-awareness cannot explain mortality salience
effects. To account for these and other potential explanations, various TMT experiments utilize control conditions, which aim to induce negative or potentially aversive feelings. As such, experiments have used control conditions that contain topics that aim to inflict feelings of pain, social rejection, future concerns and other various negative outcomes (for a review see Burke, Martens, & Faucher, 2010). Nevertheless, TMT research demonstrates that participants responding to these questions do not demonstrate worldview defense outcomes like those obtained from mortality salience manipulations.

*Factors Affecting the Mortality Salience Effect*

TMT researchers have provided a variety of support for their argument that worldview defense occurs as a response to mortality salience and have concluded that this effect is not easily attributable to alternative explanations (e.g. Greenberg et. al., 1995). As such, researchers have shifted their attention towards determining what conditions attenuate the mortality salience effect. Specifically, current research examines which mortality salience manipulations do not produce worldview defense and additionally what factors affect the relationship between mortality salience and worldview defense.

*Alternative Mortality Salience Manipulations*

Research demonstrates that not all mortality salience manipulations lead to worldview defense. For example, Cozzolino, Staples, Meyers and Samboceti (2004) subjected participants to a death reflection manipulation in a series of experiments. This manipulation consisted of a scenario that asks participants to imagine themselves trapped and dying in a burning building. After reading this passage, participants responded to questions asking how they would feel during this situation. Following a short delay, researchers then assessed extrinsic and intrinsic behavioral preferences. They found that compared to a control group, those subjected to the
death reflection were more likely to display greater intrinsic behavior, even when the participant had a predisposition towards extrinsic behavior. The authors conclude that these results suggest that different ways of thinking about one’s mortality can affect whether one displays worldview defense or not.

These results are consistent with the findings from self-reports of individuals who have experienced a close brush with death (e.g. Martin, Campbell, & Henry, 2004). Individuals who have (or had) a life threatening disease such as cancer or AIDS are less likely to respond with worldview defense after receiving news of their condition. Conversely, they appear to exemplify less concern with the opinions of others, fame and money. Concordantly, Little and Sayers (2004) proposed that death salience, that is thinking about the potentiality of an illness from which an individual has recovered from that could have led to their annihilation, appears not to produce worldview defense.

**Personality Characteristics**

In addition to the finding that not all mortality reminders produce worldview defense, research demonstrates that various personality characteristics can affect whether one will display worldview defense as a response to mortality salience. For example, in a series of experiments Niemiec and colleagues (2010) assessed participants levels of trait mindfulness. They then subjected these participants to a mortality salience or control manipulation and then measured worldview defense. They found that participants with high levels of trait mindfulness did not demonstrate worldview defense in response to a mortality salience manipulation. These participants responded no differently than those responding to control questions.

Other research demonstrates that one’s level of intrinsic religiousness can affect whether worldview defense occurs as a response to mortality salience manipulations (e.g. Friedman, &
Rholes, 2008). For example, Jonas and Fischer (2006, study 1) assessed worldview defense immediately following a terrorist attack in Istanbul, which they considered to be a naturally occurring reminder of mortality. They found that participants who scored high on measures of intrinsic religiousness did not demonstrate worldview defense following reminders of mortality, whereas those who scored low did. The work of Norenzayan, Dar-Nimrod, Hansen and Proulx (2009) replicates these results conceptually. Specifically, in study 2, they subjected participants to a control or mortality salience manipulation and then assessed the degree to which they considered religion important to their identity. They then asked participants to evaluate an essay, written ostensibly by a foreign exchange student, which criticized western culture. They found that those who indicated they were not religious evaluated the essay more negatively when their mortality was salient. Conversely, the ratings for those who indicated they were religious did not differ whether their mortality was salient or not.

**Worldview Reminders**

TMT research also demonstrates that reminding participants of certain aspects of their worldview can attenuate the mortality salience effect. For example, Cox and colleagues (2008, Study 2) found that activating thoughts of one’s parents, which they suggest acts as an anxiety buffer, reduced the prevalence of worldview defense as a response to mortality reminders. In addition, it appears that affirming one’s worldview beliefs before a mortality salience manipulation can reduce the subsequent occurrence of worldview defense. Demonstrating this effect, Dechesne and colleagues (2003, Study 3), asked participants to read an essay arguing either for or against the existence of an afterlife. They then exposed participants to a mortality salience or control manipulation. Next, they showed participants a series of vignettes describing people performing moral transgressions and asked participants to select the severity of
punishment for each person. They found that compared to those who read the essay arguing against the existence of an afterlife, participants who read the essay arguing in favor of an afterlife selected less severe punishments after a mortality salience manipulation. Furthermore, these participants’ punishment ratings did not vary from those in a control group.

TMT research also demonstrates that making certain worldview norms salient can affect which cultural values one adheres to following mortality reminders (e.g. Gailliot et. al., 2008). For example, Jonas and colleagues (2008, Study 3) primed participants with either security/conservatism or benevolence/universalism norms and then exposed them to a mortality salience or control manipulation. Next, they presented participants with a hypothetical court case, describing that a woman arrested for alleged prostitution was awaiting trial and they were to act as judges appointed to determine the amount of bond needed for her release. They found that after mortality salience, those who had been primed with security/conservatism norms recommended a harsher bond for the prostitute compared to those primed with benevolence/universalism norms. The authors conclude that mortality salience induces participants to adhere to whatever worldview beliefs are most salient at the time.

Summary

The research reviewed thus far indicates that not all confrontations with mortality produce worldview defense. Furthermore, it indicates that both situational and dispositional factors can affect whether mortality reminders produce this outcome. Next, I discuss another situational factor whose presence may determine what outcomes are produced from mortality reminders. Specifically, I address what role the accessibility of cultural worldview constructs plays in the production of worldview defense.
The Prevalence of Cultural Constructs Resulting from Mortality Salience

Arndt, Greenberg and Cook (2002) propose that cultural worldview constructs are inherently interwoven within a broader cognitive architecture that is associated with mortality thoughts. Specifically, they argue that because people demonstrate worldview defense in response to mortality reminders, cultural concepts appear to be embedded within the same cognitive framework associated with the concept of death. As such, they predict that in addition to death thought accessibility, mortality reminders should generate greater accessibility to personally relevant worldview constructs.

Arndt, Greenberg and Cook (2002) tested this assertion in a series of experiments where they had participants respond to either a mortality salience or control manipulation. Next, they used indirect measures (i.e. a word fragment completion task and a lexical decision task) to measure the accessibility of worldview constructs. They found that in general, mortality salience led to greater worldview construct accessibility, however, there was a gender difference for what worldview constructs were accessible. Specifically, they found that mortality salience led to greater accessibility of nationalistic themes for men, whereas women displayed greater accessibility for cognitions related to romantic relationships. Furthermore, they demonstrated that worldview accessibility, much like the mortality salience effect, occurs outside the realm of one’s conscious awareness. The authors conclude that one’s cultural worldview accessibility appears to be embedded within the same associative network as the knowledge of one’s own mortality in order to protect individuals from the potential anxiety caused by mortality awareness.
Cultural Construct Accessibility Influences Worldview Defense

Recently, Burgin, Sanders, vanDellen and Martin (Under Review) proposed that only some mortality reminders produce cultural construct accessibility and furthermore this accessibility mediates the relationship between mortality reminders and worldview defense. Specifically, they focused on one of the most commonly used mortality salience manipulations, the standard death essay questions (used in 79.8% of TMT studies reviewed in a recent Meta analysis; Burke, Martens, & Fuacher, 2010). This manipulation asks participants to respond to two open ended questions: “Please briefly describe the emotions that the thought of your own death arouses in you” and “Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.” The authors proposed that responses to the second question, labeled the afterlife question, appear to be informed more by shared cultural knowledge and values as opposed to responses to the first question, labeled the emotion question. As, such they predicted that responses to afterlife question would be coded as more informed by the knowledge and values learned from one’s culture compared to responses to the emotion question. They also proposed that since the afterlife question may induce participants to think of cultural constructs, namely the concept of one’s afterlife, it should also prime worldview beliefs. As such, worldview defense would only occur for participants responding to this question.

Testing this assertion, they had participants in a series of experiments respond to the emotion, afterlife or a control question. They then had coders rate each participant’s response, indicating the degree to which it appears informed by that participant’s worldview knowledge. They then presented participants with measures of worldview defense. They found that for all experiments, coders categorized the responses to the afterlife question as being informed more
by that participant’s cultural knowledge compared to responses to the emotion question and control questions. Furthermore, participants responding to the afterlife question demonstrated greater worldview defense compared to those responding to the emotion question or control questions. Participants responding to the emotion or control questions did not differ on these measures. Finally, they found that the extent to which participants’ responses appear informed by cultural knowledge mediated the relationship between which question they responded to and worldview defense. The authors conclude that the two questions from the common mortality salience manipulation appear to differently prime cultural construct accessibility and it is this accessibility combined with mortality salience that leads to worldview defense.

Summary

Consistent with the findings of Arndt, Greenberg and Cook (2002), Burgin, Sanders, vanDellen and Martin (Under Review) demonstrate a link between mortality salience and worldview constructs. Furthermore, Burgin and colleagues extend this research by demonstrating that only some mortality reminders appear to be associated with worldview constructs and this association contributes to the subsequent display of worldview defense. Although Burgin and colleagues provide initial support for this assertion, they did not assess the degree to which these cultural concepts were on the fringe of participant’s conscious awareness as was done by Arndt and Colleagues (2002). Their research only assed the degree to which responses to mortality questions appear informed by shared cultural knowledge and values. Although they found these ratings mediated their results, this does not necessarily indicate that cultural constructs were highly salient to participants after having responded to mortality salience questions.
The Current Research

The current research aims to extend the findings of Burgin, Sanders, vanDellen and Martin (Under Review) by using indirect measures to assess the extent to which cultural worldview constructs are accessible after different mortality reminders. By using indirect measures instead of simply coding participant’s responses, the current research measures how accessible worldview concepts are after each manipulation and not simply whether these concepts influence participant’s responses to each mortality question. Following the research and findings of Burgin and colleagues, the current experiments manipulated mortality salience by assigning participants to respond to the emotion or afterlife question from the most commonly used mortality salience manipulation. Similar to the results found by Burgin and colleagues, it was predicted that participants responding to the afterlife question, more so than the emotion question, would access worldview constructs when formulating a response to this question. Therefore, compared to those responding to the emotion or a control condition, these participants will demonstrate higher cultural worldview accessibility on later implicit measures.

In addition to assessing worldview construct salience, both studies incorporated measures to assess the production of worldview defense in response to mortality reminders. Consistent with the work of Burgin and colleagues (under review), it was predicted that greater worldview defense will occur for participants responding to the afterlife question compared to the emotion or a control question. Furthermore, it is also predicted that the degree to which cultural worldview constructs are accessible will mediate this relationship. That is, compared to the other questions, participants responding to the afterlife question will demonstrate higher worldview construct accessibility and this accessibility will mediate the relationship between which question participants respond to and their production of worldview defense.
CHAPTER 2

EXPERIMENT 1: MORTALITY SALIENCE AND WORLDVIEW CONSTRUCT SALIENCE

Experiment 1 aimed to assess the degree to which worldview constructs were salient after responding to the emotion, afterlife or control question. In addition, it also assessed whether these questions led to differences in the production of worldview defense and to what degree worldview construct salience mediated this effect. As mentioned before, Burgin, Sanders, vanDellen and Martin (Under Review) tested a similar hypothesis. However, they simply coded participant’s responses to each question and did not measure the degree to which worldview constructs were salient after responding to mortality questions, as was done by Arndt, Greenberg and Cook (2002). The current experiment aimed to remedy this situation by adapting the procedure used by Arndt and colleagues to measure worldview construct accessibility. Specifically, participants responded to a lexical decision task (i.e. participants decide if a string of characters is a word or not a word), which contains words related to worldview constructs. Arndt and colleagues demonstrate that a faster response time to worldview relevant words indicates that worldview constructs are highly accessible. Arndt and colleagues however, find a gender difference for which worldview constructs are salient. Specifically after mortality salience, males respond faster to nationalistic themes whereas females respond faster to romantic relationships. Due to this finding, the present experiment included words related to both nationalistic themes and romantic relationships within its lexical decision task.

Previous research consistently demonstrates that mortality salience leads to harsher judgments of moral transgressors (e.g. Florian & Mikulincer, 1997; Rosenblatt et al., 1989). As such, the current experiment will use Florian and Mikulincer’s (1997) Moral Transgressions
Scale to measure worldview defense. This scale presents participants with several scenarios describing people performing moral transgressions and then asks participants to select the severity of punishment for each person.

Research demonstrates that compared to the emotion question, responses to the afterlife question appear more informed by that participant’s cultural knowledge and values (Burgin, Sanders, vanDellen, & Martin, under review). Given this finding, it was predicted that participants responding to the afterlife question would demonstrate higher worldview construct accessibility by responding faster to worldview related words compared to those responding to the emotion or a control question. In addition, because responding to the afterlife question generates worldview construct accessibility, it was predicted that these participants would also demonstrate greater worldview defense by selecting harsher punishments for moral transgressors compared to those responding to the emotion or control questions. Lastly, it was predicted that this worldview construct accessibility would mediate the relationship between which question was answered and the production of worldview defense. In the end, it is hoped that this experiment will extend the findings of Burgin, Sanders, vanDellen, and Martin’s (under review) by illustrating the important role unconscious salience of worldview constructs plays in the production of worldview defense in response to mortality reminders.

Method

Participants

Participants included 55 (12 men and 43 women) people from introductory psychology classes at the University of Georgia enrolled in the research participant pool. Participants received partial course credit for their participation.
Procedure and Materials

Participants completed the experiment individually on computers in a small lab room in groups of 3 to 4. Before the experiment began, experimenters informed participants that they were writing about aspects of their life and that they would be making personal ratings on several value items. After participants gave their consent to participate, the experimenter set them at a computer. Participants completed the experiment on computers using MediaLab (2006 version) and responded by using the keyboard and mouse. All participants responded to the same questionnaires. However, random assignment determined which mortality salience question they answered (i.e. emotion, afterlife or control question).

Filler Task. To allow participants to settle into the experiment and deflect attention from the mortality salience manipulation, they first completed a short filler task. Specifically, they completed Rosenberg’s (1965) Self-Esteem scale.

Mortality Salience Manipulation. The computer then randomly assigned participants to respond to the emotion or afterlife question from the commonly used mortality salience manipulation or a control question. The emotion question asked participants to “Please briefly describe the emotions that the thought of your own death arouses in you” whereas the afterlife question asked participants to “Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.” Following other TMT experiments (e.g. Arndt, Greenberg, & Cook, 2002), participants responding to the control question received questions paralleling the mortality salience manipulation but contained the words “dental pain” as a replacement for the word death in both of the questions.

Affect and Delay. TMT asserts that mortality salience manipulations do not influence positive or negative affect (e.g., Greenberg et al., 1990). To demonstrate consistency with
previous research, participants completed the 20-item Positive and Negative Affect Schedule—Expanded Version (PANAS–X; Watson & Clark, 1992). This measure assesses participant’s current mood, such as fear, sadness, guilt, and hostility. This questionnaire presented participants with 20 mood words and instructed them to rate the “extent you feel this way right now, that is, at the present moment” on scales ranging from 1 (very slightly or not at all) to 5 (extremely). In addition to this measure being used to assess mood, previous research demonstrates that the mortality salience effects occur after a short delay (Greenberg et al., 1994), when death thoughts are highly accessible but not in direct awareness. Inclusion of this measure acted as the delay between the mortality salience manipulation and dependent measures.

**Worldview Relevant Constructs.** Experiment 1 used a lexical decision task procedure developed by Arndt, Greenberg and Cook (2002) to measure the presence of worldview relevant constructs. Specifically the current experiment measured participants’ reaction times to worldview relevant and irrelevant stimuli. To accomplish this, participants responded to a lexical decision task (i.e., judgments about whether a string of letters is a word or nonword). Participants briefly saw a string of x’s (which served as a fixation point) immediately followed by string of letters on the computer screen. Participants then decided as quickly as possible whether the string of letters was a word (e.g., “chair”) by pressing the left shift key or a nonword (e.g., “taple”) by pressing the right shift key. It is important to note that Experiment 1’s lexical decision task differed minutely from that of Arndt, Greenberg and Cook (2002), in that participants did not receive a string of x’s immediately following the string of letters, the importance of this will be elaborated upon later in the discussion section. To form nonwords, one letter in nouns and verbs was changed. The experiment presented participants with a total of 48 trials that displayed eight relationship words (“dates,” “bride,” “wife,” “marriage,” “husband,” “engaged,” “lover,” and
“romance”), 8 nationalistic words (“senate,” “patriot,” “law,” “congress,” “states,” “anthem,” “america,” and “national”), along with 8 filler words (e.g., “counter”) and 24 nonwords (e.g., “plrform”). The lexical decision task evenly distributed word types across the 48 trials and this format was presented to all participants.

Moral Transgressions Scale. Next, participants responded to Florian and Mikulincer’s (1997) Moral Transgressions Scale. This scale consists of 10 vignettes that describe different offenses. Participants then rated the severity and recommend the extent of the punishment for each defense by using a scale that ranges from 1 (very light) to 7 (very severe). The following is a sample vignette:

“The head executive of a scholarship fund for low-income students fled overseas with the grant money. “He ran away with our future,” said a representative of the students. “We have nothing. How are we supposed to stay in school? Our education was supposed to get us out of our situations, but now our dreams are pushed far away, maybe forever.”

Previous research demonstrates that mortality salience produces harsher judgments on this scale (e.g., Florian & Mikulincer, 1997).

Demographic information. After the Moral Transgressions Scale, participants provided general demographic information such as age, gender, ethnicity, year in school, and political orientation.

After completing these questionnaires, experimenters thoroughly debriefed all participants, thank and excused them from the experiment.

Results

Moral Transgressors

To form the primary measure of worldview defense, composite scores were created by calculating the mean of all 20 questions used in the Moral Transgressions Scale. Scores on this
scale ranged from 1 to 7 ($\alpha = .87$). A one-way ANOVA reveals that groups significantly differ on how severe they rated the transgressors, $F(2,52) = 3.90, p < .05$. As predicted, planned comparisons reveal that participants who answered the afterlife question rated the transgressions to be significantly more severe compared to participants who answered the emotion and control questions, $p’s < .05$ (See Table 1). Furthermore, this severity rating did not significantly differ between the groups who responded to the emotion or control questions, $p > .05$.

Worldview Accessibility

Following the recommendations of Bargh and Chartrand (2000) all reaction times to the lexical decision task that were less than 200 ms were recoded to 200 ms and greater than 2,000 ms were recoded to 2,000 ms. Less than 1% of the responses required this recoding. Next, following the recommendations of Fazio (1990), the reaction times for trials where participants responded incorrectly (i.e. stated the string of letters was a word, when it was not and vice versa) were removed from further analysis. Overall, less than 5% of the reaction times were removed due to incorrect responding from participants. Finally, as the literature recommends (Fazio, 1990; Bargh & Chartrand, 2000) all reaction time data was log transformed.

To determine the accessibility of nationalistic or relationship concepts, two means were computed by averaging the log transformed reaction times of the 8 words from each respective category. A one-way ANOVA reveals that groups did not significantly differ on their reaction times to relationship words $F(2,52) = .06, p = .94$ or nationalistic words $F(2,52) = .67, p = .51$. Next, the log transformed reaction times for all culturally related words (i.e. nationalistic and relationship) were averaged to create a measure of accessibility to both of these concepts. A one-way ANOVA reveals that groups do not significantly differ on their reaction times to this composite measure $F(2,52) = .31, p < .73$. The findings of Arndt, Greenberg & Cook, (2002),
suggest that women respond faster to relationship words and men to nationalistic words after mortality reminders. This was tested by separating the output by gender to see if males who had written about death (either the emotion or the afterlife question) responded faster to nationalistic words and females to relationship words. Unfortunately, Experiment 1’s sample did not contain enough male participants to test the effect of which question they responded to on their accessibility of nationally related concept words. However, the results from a one-way ANOVA looking at females only demonstrates that the question participants responded to did not affect their reaction times to relationship words $F(2, 40) = .1, p = .90$.

Because groups did not differ on their reaction times to cultural worldview related constructs, mediation was not tested to ascertain how much this accessibility affected the relationship between which question participants responded to and the severity of their ratings towards moral transgressors.

Other Measures

A One-way ANOVA reveals that, as in previous research, groups did not vary on their level of positive or negative affect, $Fs < 1.55, ns$. Furthermore, no other individual difference variables, such as self-esteem, political orientation or religious affiliation affected the relationship between which question participants responded to and their severity towards the moral transgressors, all $p$’s $> .05$.

Discussion

The results from Experiment 1 replicate those found by Burgin, Sanders, vanDellen and Martin (under review). Compared to participants who responded to the emotion or control questions, those who responded to the afterlife question demonstrated greater worldview defense by selecting severer punishment towards moral transgressors. Experiment 1 however, did not
support the prediction that greater worldview accessibility would occur for those who responded to the afterlife question compared to the emotion or control questions. All groups within Experiment 1 demonstrated similar response times to nationalistic and romantic relationship related words. Due to the lack of this finding, mediation was not tested to ascertain if greater worldview accessibility mediated the relationship between which question participants responded to and their severity ratings towards moral transgressors. An important thing to note is that Experiment 1 consisted mainly of women participants. Only 12 males participated in the experiment. Had more men participated in this experiment, the predicted outcome of greater worldview accessibility following the responses to the afterlife question could have been tested more effectively for nationalistic words. Although greater worldview accessibility was not found in the afterlife condition, the results of Experiment 1 do not disconfirm previous findings that some form of worldview accessibility may be potentially driving participants who respond to the afterlife question to demonstrate greater worldview defense. Potential explanations for the lack of this finding and alternative interpretations will be discussed in detail in the General Discussion section.

Interestingly, Experiment 1 also fails to replicate the findings that female participants demonstrate greater accessibility to romantic relationship constructs after mortality salience inductions (Arndt, Greenberg, & Cook, 2002). One potential explanation for this difference may be the way that Arndt, Greenberg and Cook conducted their lexical decision task. Specifically, the methods section for their paper mentions that participants in their lexical decision task were presented with a string of letters for 1,000 ms and this was both preceded and followed by a string of x’s. They then describe that participants were asked to indicate whether the string of letters they just saw was a word or not. One problem is they never explicitly specify if
participants could make their selection while the letters were being presented or only after they left the screen and the string of x’s appeared. Furthermore, the methods section implies that the latter might be the case. Specifically, participants could only respond after the string of letters had left the screen. If they used this method, then their results may not be truly measuring automatic processing, as participants are typically able to consciously decide if a string of characters is a word or not before the 1,000 ms time had elapsed (Bargh & Chartrand, 2000). Participants would then have to wait the additional amount of time until the subsequent x’s were presented in order to make their selection. Again, if this is the case, then their results may not be truly measuring automatic processing of worldview related constructs, but rather participant’s controlled processing as they are assessing participant’s reaction times to the second string of x’s.
CHAPTER 3

EXPERIMENT 2: MORTALITY SALIENCE AND NORM PRIMING

As reviewed in the literature above, priming certain worldview norms can attenuate the mortality salience effect (Jonas et al., 2008). Typical TMT findings demonstrate that participants adhere more to personalized worldview beliefs following mortality reminders. This priming research however demonstrates that manipulating which worldview norms are salient can affect the beliefs people use to inform judgments on the tasks that follow mortality reminders. For example, TMT research typically finds that mortality salience leads to harsher judgments towards moral transgressors (e.g. Rosenblatt et. al., 1989). Conversely, this priming research demonstrates that making benevolence/universalism norms salient before a mortality salience manipulation can lead participants to make less harsh judgments towards moral transgressors. Previous research indicates that worldview beliefs and values are used to create the responses to the afterlife question and not the emotion question (Burgin, Sanders, vanDellen, & Martin, under review). Therefore, Experiment 2 aimed to address whether priming different worldview norms affected the judgments made towards moral transgressors for participants who responded to the afterlife question compared to the emotion and control questions.

The current experiment tested the effects of priming either benevolence/universalism or conservatism/security norms on the subsequent display of worldview defense. However, before responding to worldview defense measures, participants answered the emotion, afterlife or a control question. To prime worldview norms, the current experiment used a technique adapted from Jonas and colleagues (2008). Specifically, participants unscrambled sentences that
contained words related to either benevolence/universalism or conservatism/security. They then constructed grammatical sentences using these words.

To measure worldview defense the current experiment utilized a well-known dependent measure created by Rosenblatt and colleagues (1989). Specifically, this measure presents participants with a scenario describing that they are the judge appointed for setting the bail for an alleged prostitute. Rosenblatt and colleagues found that compared to a control group, individuals whose mortality was salient suggest a greater punishment for this alleged prostitute. They explain that a prostitute violates one’s moral principles, which in turn threatens one’s worldview. Participants whose mortality is salient are thus more likely to display greater negative feelings towards those who violate this worldview.

Compared to the responses of the emotion and control questions, responses to the afterlife question appear to require participants to draw more from cultural beliefs and values when generating a response (Burgin, Sanders, vanDellen, & Martin, under review). Therefore, compared to those responding to the emotion and control questions, participants responding to the afterlife question were predicted to be more influenced by which norms were salient at the time. For the current experiment, an interaction was predicted such that those responding to the afterlife question would demonstrate greater worldview defense (i.e. set a higher bail amount for an alleged prostitute) when conservatism/security norms were primed and less worldview defense when benevolence/universalism norms were primed. Because both the emotion and control questions do not appear to be generated from worldview knowledge, priming which worldview norms are salient would not affect whether these participants demonstrated worldview defense or not. In the end, this experiment will demonstrate that priming which
worldview norms are salient will only affect the outcomes produced by mortality salience manipulations that invoke participants to think about worldview beliefs.

Method

Participants

Participants included 143 (19 men and 124 women) people from introductory psychology classes at the University of Georgia enrolled in the research participant pool. Participants received partial course credit for their participation.

Procedure and Materials

The procedure for this experiment was similar to Experiment 1. Participants completed the experiment individually on computers in a small lab room. The experimenter informed participants that they would be filling out different questionnaires that address understanding language, personality, and decision-making. All participants responded to the same questionnaires. However, random assignment determined whether they responded to the emotion, afterlife or a control question.

Filler Task. Participants first completed Rosenberg’s (1965) Self-Esteem scale to settle into the experiment.

Conservatism/Security or Benevolence/Universalism Prime. Following the work of Jonas and Colleagues (2008), participants responded to a questionnaire used to prime different worldview norms. Specifically, the questionnaire presented participants with 20 sentences containing words that were scrambled and out of order. Next, the questionnaire asked participants to take each scrambled sentence and construct a grammatical one by using all but one of the words. To prime security/conservatism or benevolence/universalism, participants randomly received either ten of the twenty sentences containing words related to
security/conservatism (e.g. forbidden, control, consequent, security, strict rules) or
benevolence/universalism (e.g., merciful, understanding, sympathy, reconcile, forgiving).

Mortality Salience Manipulation. Participants then randomly received the emotion, afterlife or a control question. Akin to Experiment 1, participants responding to the control question received questions paralleling the mortality salience manipulation but contained the words “dental pain” as a replacement for the word death in both of the questions (e.g. Arndt, Greenberg, & Cook, 2002).

Affect and Delay. Next, to serve as a delay, participants completed the 20 - item Positive and Negative Affect Schedule—Expanded Version (PANAS–X; Watson & Clark, 1992).

Worldview Defense. To measure worldview defense, participants then received the same task implemented by Rosenblatt and colleagues (1989). Specifically, they received a questionnaire describing a hypothetical court case where a woman arrested for alleged prostitution was awaiting trial and they were to act as judges appointed to determine the amount of bail needed for her release. We informed participants that bail refers to a sum of money exchanged for the release of an arrested person as a guarantee that the person will appear in court. Participants also received some general information on how judges make their decision during cases like this, such as that the typical bail amount set for this type of case ranges from $0 to $999. Participants then indicated the amount of bail between $0 and $999 they would set for the case described.

Demographic information. After the Moral Transgressions Scale, participants provided general demographic information such as age, gender, ethnicity, year in school, and political orientation.
After completing these questionnaires, experimenters thoroughly debriefed all participants, thanked and excused them from the experiment.

Results

*Question Answered and Norms Primed*

A 3 (Question Answered: emotion vs. afterlife vs. dental pain) X 2 (Norm Primed: security/conservatism vs. benevolence/universalism) ANOVA was conducted. Analysis reveal a non-significant main effect for Question Answered, $F(2, 137) = 1.94, p = .15$. That is, participant’s suggested bail amount did not significantly differ depending upon which question they answered. Analysis also reveal a non-significant main effect for Norm Primed, $F(1, 137) = .10, p = .76$. Alone, which norm was primed did not have an affect on the amount of bail participants suggested. Despite the non-significance of these two main effects, the analysis reveals a significant interaction $F(2, 137) = 4.76, p < .01$ (see Figure 1).

Simple main effect analyses were conducted to decompose the interaction. A Levene’s test for equality of error variances reveals that error variances did not significantly vary across the groups, $F(5, 137) = .20, p = .96$. As a result, the omnibus error term was used when decomposing the two-way ANOVA into its simple main effects. The means for all groups are displayed in Table 2. The simple effects within each level of Question Answered reveal that participants responding to the emotion question set a significantly higher bail amount when primed with conservative-security norms compared to benevolence-universalism norms, $F(1, 137) = 5.41, p < .05$. The amount of bail set for those responding to the afterlife or control question did not significantly vary depending upon if they were primed with security/conservatism or benevolence/universalism norms, $F(1, 137) = 3.10, p > .05$ and $F(1, 137) = 1.07, p > .05$ for afterlife and dental pain respectively. The simple effects within each level of Norm Primed also reveal that those primed with security-conservatism norms
significantly differ depending upon which question they responded to, $F(2, 137) = 6.00, p > .01$. Pairwise comparisons reveals that for those who were primed with security-conservatism norms, participants who responded to the emotion question, set a significantly higher bail compared to those responding to the afterlife or dental pain questions, $p’s > .01$. Security-primed participants who responded to the afterlife or dental pain question however did not significantly vary from one another, $p = .96$. Finally, those primed with benevolence-universalism did not differ in their suggested bail as a function of question asked, $F(2, 137) = 6.03, p = .55$.

Other Measures

As with previous TMT research, the question participants responded to did not affect their level of positive or negative affect, $F$s < 1.88, ns. Furthermore, no other individual difference variables, such as self-esteem, political orientation or religious affiliation affected the found two-way interaction.

Discussion

The results from Experiment 2 demonstrate that participants responding to the emotion question react differently to a measure of worldview defense depending upon which worldview norms had been primed beforehand. Specifically, these participants displayed greater worldview defense by suggesting a higher bail amount for an alleged prostitute after having security-conservatism norms primed and a significantly lower amount after having benevolence-universalism norms primed. Furthermore, these primes did not affect the suggested amount of bail set for those responding to the afterlife or control questions. In addition, after having security-conservatism norms primed, those responding to the emotion question suggested a higher bail amount compared to those who responded to the afterlife or control questions.
While the results from this Experiment do not support the initial prediction that those who responded to the afterlife question would be more susceptible to previously primed worldview norms, they do support a different yet consistent hypothesis. Specifically they support the overall hypothesis that the two commonly used mortality salience questions appear to produce different outcomes when separated from one another (Burgin, Sanders, VanDellen, & Martin, Under Review). Furthermore, these results support the hypothesis that worldview accessibility plays an integral role in producing worldview defense as a response to mortality reminders. Specifically, these results illustrate that those responding to the emotion question appear to be more susceptible to worldview primes. Conversely, participants responding to the afterlife question do not appear to be affected by which worldview norms are primed beforehand. Even though their mortality was salient, participants in this condition did not display a greater amount of worldview defense compared to those who responded to a control question. Therefore, it appears that the emotion question from the typical mortality salience manipulation may be the driving component that produces the findings akin to those illustrated by Jonas and colleagues (2008). Implications of this finding will be elaborated upon more in the General Discussion.
CHAPTER 4

GENERAL DISCUSSION

Results from two Experiments illustrate that the questions used in the common mortality salience manipulation produce different results when given separately to participants. In addition, these findings help elucidate the role that worldview accessibility plays in producing the typical worldview defense outcomes found in TMT studies (e.g. Solomon, Greenberg, & Pyszczynski, 1991). Specifically, it appears that worldview accessibility affects each question differently. Experiment 1 demonstrates that when participants are given each mortality salience question separately, those responding to the afterlife question show greater worldview defense compared to those responding to the emotion or a control question. Conversely, Experiment 2 demonstrates that participants who responded to the emotion question demonstrated greater fluctuation on a measure of worldview defense depending upon whether they had been primed with norms related to benevolence-universalism or security-conservatism. Overall, these results suggest that when given alone the afterlife question produces greater worldview defense. However, when combined with the priming of worldview norms related to security and conservatism, those responding to the emotion question will be more likely to demonstrate worldview defense.

Worldview Accessibility

As mentioned in the discussion section of Experiment 1, compared to those who responded to the emotion and control questions, participants responding to the afterlife question demonstrated greater worldview defense. These participants however did not demonstrate the predicted finding of greater worldview accessibility compared to those responding to the emotion
or control questions. Furthermore, the results from this Experiment are inconsistent with the findings of Burgin, Sanders, vanDellen and Martin (under review) who found that participant’s responses to the afterlife question appear more informed by cultural knowledge and beliefs compared to the responses from the emotion and control question. These results are also inconsistent with the findings of Arndt, Greenberg and Cook (2002), who found that participants who’s mortality was salient demonstrated greater worldview accessibility through the use of indirect measures.

As discussed before, one potential explanation for Experiment 1’s inability to replicate these findings may be due to the lack of male participants in the study and the methodology used by Arndt, Greenberg and Cook (2002). However, another explanation may be that the experiment lacked additional words to assess if other worldview relevant constructs were salient after the mortality manipulations. Specifically, the lexical decision task used in Experiment 1 only contained words related to nationalistic and romantic relationship constructs. By using other worldview relevant words, Experiment 1 could have better assessed whether different worldview constructs were salient after mortality reminders. For example, Burgin, Sanders, vanDellen and Martin (under review), demonstrate that responses to the afterlife question appear informed by cultural values. Experiment 1 could have included words related to cultural values, such as concepts related to morality (i.e. right and wrong), to better assess if this construct was salient after the manipulation. Future research examining which worldview constructs are salient after mortality reminders should look at other constructs in addition to romantic relationships and nationalistic terms.
The Full Mortality Salience Manipulation

Numerous TMT studies demonstrate that worldview defense is the main outcome of mortality salience (e.g. Rosenblatt & Greenberg, 1989, Greenberg, 1990, etc.). However, as discussed earlier, this theory has evolved over time and now researchers are attempting to gain a greater understanding for what conditions need to be present in order to produce this outcome (e.g. Cozzolino, Staples, Meyers, & Samboceti, 2004; Little and Sayers, 2004). Given this research, it appears that our results do not necessarily contradict TMT findings, but help add a new understanding for when mortality salience leads to worldview defense.

Traditionally participants involved in TMT research receive the commonly used mortality salience manipulation as a whole, not separately (Burke, Martens, & Fuacher, 2010). To this extent, it appears that when including both questions together, each question may influence the way participants respond to measures of worldview defense. Although our results cannot speak to the other TMT findings obtained from different forms of mortality salience, it appears that the afterlife question may be the factor driving participants to display worldview defense, in absence of prior worldview priming. As demonstrated in Experiment 1, participants who responded to the afterlife question demonstrated worldview defense. Conversely, those responding to the emotion question did not despite the fact that their mortality was salient. This indicates that the afterlife question appears to be a key component in producing worldview defensive responding when participants respond to the full mortality salience manipulation. However, when worldview norms related to security and conservatism are primed before the manipulation, it appears that the emotion question is the component responsible for producing worldview defense. As demonstrated in Experiment 2, those responding to the afterlife question did not show increased worldview defense after being primed with these worldview norms. Therefore, when participants
are primed with security-conservatism norms and given the full mortality salience manipulation, it appears that the emotion question may be the driving component that produces worldview defense.

Final Remarks

Our results support the assertion that not all reminders of mortality lead to worldview defense and that other components need to be present in order for worldview defense to occur. Furthermore, our results also suggest that the typically used mortality salience manipulation may contain questions that produce different responses when separated. To this end, researchers should continue to uncover what conditions need to be present for worldview defense to occur in response to mortality salience and the role that worldview accessibility plays in producing worldview defense.
<table>
<thead>
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<th>Question Asked</th>
<th>Emotion Question</th>
<th>Afterlife Question</th>
<th>Dental Pain Question</th>
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<td>$n$</td>
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*Note:* Differing subscripts indicate within-row significant differences at $p < .05$.

*Table 1.* Experiment 1: Means and standard deviations for severity of punishment for moral transgressors as suggested by participants.
<table>
<thead>
<tr>
<th>Norm Primed</th>
<th>Emotion Question</th>
<th>Afterlife Question</th>
<th>Dental Pain Question</th>
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</table>

*Table 2. Experiment 2: Means and standard deviations for bail amount suggested by Participants*
Figure 1. Experiment 2: Interaction between question asked and norm primed on amount of bail set for alleged prostitute
REFERENCES


Jonas, E., & Greenberg, J. (2004). Terror management and political attitudes: The influence of


