

DEAD-SET AGAINST IT? THOUGHTS OF DEATH CAN PROMOTE RESISTANCE
TO ATTITUDE CHANGE

by

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ABSTRACT

Terror Management Theory (TMT) argues that people experience an underlying sense of ‘terror’ when presented with their own mortality, causing them to more strongly defend their ideals (Greenberg, Pyszczynski, & Solomon, 2000). Although much support exists for this idea, prior research has not specifically investigated whether mortality reminders will enhance individuals’ resistance to persuasive attempts that are counter to their existing attitudes. Thus, the purpose of the current study was to examine how reminders of individuals’ mortality affect participants’ attitudes towards persuasive messages that were pro- or counter-attitudinal. In the presented study, participants’ mortality was or was not made salient. Next, participants read a pro- or counter-attitudinal essay regarding a tuition plan that was supported by strong or weak arguments, after which message attitudes were assessed. Results indicated that participants formed more favorable attitudes after reading pro-attitudinal essays and less favorable attitudes after reading counter-attitudinal essays. This effect was particularly pronounced in the mortality salience condition. These results are consistent with TMT in that reminders of mortality lead individuals to resist (i.e., form more unfavorable attitudes) counter-attitudinal persuasive appeals.

INTRODUCTION

Images and messages about death, our inexorable demise, are pervasive in today's society. Death reminders frequently permeate our lives as evidenced by the prominence of television shows that highlight hospital emergencies or murders, horror movies, images of war casualties, and the recent popularity of clothing featuring skulls. Research over the past twenty years has indicated that both subtle and overt death reminders provoke a terror that individuals must manage if they are to function adequately in their environment (Greenberg, Solomon, & Pyszczynski, 1986). Further, individuals must either literally or symbolically believe they will transcend death, or at least make sufficient efforts in this vein, to overcome the terror induced by the veritable onslaught of death reminders. One tactic individuals can use to overcome such terror is through a belief in literal immortality, or the idea that they will continue to exist in an afterlife. Besides believing in literal immortality, individuals can also symbolically overcome death by integrating their sense of self with more permanent fixtures such as a culture and its worldviews, commonly held attitudes, as well as by believing they are worthy individuals within those fixtures (Greenberg, Solomon, & Pyszczynski, 1997). Indeed, as will be discussed shortly, much research indicates that individuals value their culture (e.g., religions, countries, and pertinent symbols; see Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994) and their idiosyncratic attitudes (e.g., preferred sports teams and attitudes about local issues; see Ferraro, Shiv, & Bettman, 2005) more so after they have been reminded of their mortality. Additionally, individuals dislike others who hold

different worldviews and attitudes to a greater extent when confronted with their own mortality, an indication that their own views are perceived as relatively superior (Arndt Greenberg, Solomon, Pyszczynski, & Simon, 1997; McGregor, Lieberman, Greenberg, Solomon, Arndt, Simon, & Pyszczynski, 1998).

Interestingly, research on people's reactions to death has largely focused on whether experimental participants like (or dislike) others who hold opposing views. TMT research has not clearly addressed people's reaction to the opposing viewpoint itself, nor a possible change in people's viewpoints. One untested prediction of TMT is if a person experiencing mortality salience (MS) will form a more unfavorable opinion, not just for someone who expresses an opposing worldview, but for the worldview itself. The ideas and research proposed within this thesis will address the possibility that, especially when mortality is made salient, individuals will be receptive to persuasive appeals that are consistent with their current attitudes, but resist and refute persuasive appeals that are inconsistent with their current attitudes. In so doing, individuals would be championing the promulgation of their values through time, despite their own ultimate demise.

BACKGROUND

According to the developers of Terror Management Theory (TMT; e.g. Greenberg, Solomon, & Pyszczynski, 1986) humans are in a fairly unique position in that they are able to realize that they will die but have the desire to survive. Given that humans can contemplate their death, the realizations about death have the potential to affect them psychologically and, ultimately, behaviorally (planning, strategy, self-contemplation, and motivated reasoning). TMT asserts that this realization of death results from three unique features of human cognition (Greenberg et al., 1986). Greenberg et al. offer that humans possess the ability to contemplate and mentally simulate possible future events. That is, humans can mentally construct possible future situations and reason about the potential consequences associated with these future situations. As a result, humans can determine cause and effect relationships (Pyszczynski, Greenberg, & Solomon, 1999). Additionally, TMT asserts that humans are self-aware (i.e., realize they exist and that their behavior affects their environment) and that this quality is an important feature of human cognition. Self-awareness allows humans to understand that their behaviors have consequences and that these consequences could affect future events. Ultimately, these three aspects of cognition lead humans to the realization that they will die: they are aware of themselves, they see other people and animals die, and thus reason that they too will die. Given that people are aware of their ultimate death, TMT attempts to explain just how this awareness might affect individuals' thoughts and behaviors.

TMT asserts that there are psychological and behavioral consequences for individuals when they are either subtly or overtly reminded of their death. Foremost, Solomon, Greenberg, and Pyszczynski (1991) suggest that mankind's capacity to understand the inevitability of death and our instinctual drive to avoid death can cause a fear of death and the potential for terror. Thus, reminders of death induce terror because death is inherently in conflict with the biological desire to survive and reproduce. Further, this terror can result from either immediate and real threats of death (e.g., being chased by a lion, having a gun pointed at one's head) as well as by the mere activation of the concept of death (watching a horror movie, seeing the word "death" out of the corner of one's eye). According to Greenberg et al. (1986) if this terror is not dealt with and alleviated, it could lead to a paralyzing fear that will hinder survival efforts and reproductive success. Though this survival aspect of the theory remains speculative, ample research evidence indicates that mortality salience does indeed cause unconscious terror (Arndt et al., 1997; Solomon et al., 2000). For the sake of survival, TMT suggests that individuals must overcome this terror. Greenberg et al. (1994) argue that such terror will dissipate if it is dealt with actively (e.g. distracting one's self from thoughts of death, promotion of one's worldviews to bolster a sense of death transcendence), a topic to which this discussion will now turn.

One obvious way in which people could overcome the terror induced by death reminders is by becoming immortal. If individuals learned that they would not die—that there was a cure for death, for example—then they would no longer experience a fear of death. Presently, however, physical immortality is unattainable. Nonetheless, Greenberg

et al. (1986) hypothesized that people could gain a sense of immortality through culture. Specifically, Greenberg et al. (1986) argued that people can cope with the terror induced by death reminders by achieving a sense of literal or symbolic immortality through acceptance of cultural concepts and affiliations (see also Landau, Solomon, Greenberg, Cohen, Pyszczynski, Arndt, Miller, Ogilvie, & Cook, 2004). Literal immortality refers to the idea that individuals will in some way continue to exist despite the physical destruction of the body (e.g. an afterlife; Pyszczynski et al., 1999). Most cultures and religions proffer the concept of an afterlife, and to the extent that individuals share this belief, the terror induced by death can be allayed. Symbolic immortality, on the other hand, refers to individuals' ability to transcend death through their cultural ideals, which have the ability to continue indefinitely, certainly well beyond the individual's death. For example, democrats can obtain symbolic immortality through the belief or knowledge that the party ideals will continue after their own death (Greenberg, Pyszczynski, Solomon, Rosenblatt, Veeder, Kirkland, & Lyon, 1990). On the whole, Pyszczynski et al. (1999) offer that culture comprises a system of beliefs (or worldviews) that help people cope with death by promoting a sense of literal immortality or symbolic immortality by continuing to exist and represent the individual past their death. Thus, cultural worldviews should become very important to individuals' behaviors and thoughts when they are reminded about their mortality.

As will be addressed more specifically below, individuals tend to attach greater importance to their culture worldview, and more strongly defend its validity, following death reminders. Presumably, this occurs as an effort to buttress the cultural ideals and

secure literal and symbolic immortality. Importantly, the argument is made in this thesis that such behaviors have clear implications for predicting the extent to which individuals will accept or reject attempts to change their worldviews (i.e., succumb to persuasive appeals) after mortality has been made salient. In particular, the TMT literature just described highlights the possibility that following mortality reminders individuals might find persuasive appeals acceptable if they are consistent with their worldviews, but unfavorable and unacceptable if the appeals are inconsistent with their world views, a possibility consistent with research reviewed in the following section.

Cultural Worldviews and Terror Management Theory

Greenberg et al. (1986) theorized that there are two distinct ways cultural worldviews can serve to buffer individuals' terror about death via the promotion of literal or symbolic immortality. First, as discussed above and detailed within this section, Greenberg et al. (1986) theorized that culture is important because it provides individuals a chance for literal immortality (e.g., most cultures offer literal immortality through belief in an afterlife). As well, by belonging to a group with shared values or attitudes, a person can feel elements of their identity will transcend death by having other individuals share that same worldview (i.e., the culture affords thoughts of symbolic immortality; Greenberg, Martens, Jonas, Eisenstadt, Pyszczynski, & Solomon, 2003; Pyszczynski, et al., 1999). That is, the relative permanence of worldviews allows individuals to achieve symbolic immortality by assuring that part of their identity will survive despite their own death. The second buffer against terror is self-esteem, which can be gained when group

members validate that an individual has met the standards set forth by the culture. This validation from the group also ensures that the individual will have a chance to gain literal or symbolic immortality. This topic will be reviewed in a following section.

Worldviews

Worldviews are best defined as human-created belief systems that allow for the transmission of ideals throughout time (Solomon et al., 2000). However, worldviews can also be thought of in terms of attitudes. Attitudes, or general and *enduring* evaluations, are comprised of behavioral, emotional, and cognitive aspects (Petty & Cacioppo, 1981). Similarly, worldviews also contain behavioral, emotional and cognitive aspects (Arndt et al., 1997). In fact, it is reasonable to assert that worldviews are made up of a series of attitudes regarding a central topic (e.g. religion). In some instances these attitudes may manifest themselves on a behavioral level (e.g. hostility towards an out-group) while at other times manifesting on a cognitive level (e.g. more favorable beliefs of one's in-group; McGregor et al., 1998). For the purpose of the following discussion, it is assumed that worldviews and attitudes are similar in their makeup and therefore a change in attitude may also reflect a change in worldview support. In general then, worldview promotion allows parts of individuals' identities (i.e. their attitudes) to "live on" through a shared culture perpetuated by other group members, leading to symbolic immortality.

In contrast, under mortality salience, a threat to one's sense of symbolic immortality will be experienced if members of one's group stop promoting the original group's ideals to which an individual prescribes or if different groups provide more

enticing worldviews that overcome those of one's own group. Indeed, an attack on a group's ideals could lead to the collapse of the group and/or its ideals and must be countered if the group is to continue and a group member is to achieve symbolic immortality (Greenberg et al., 2003; Pyszczynski, et al., 1999). Overall, then, after individuals are reminded of their inevitable death, they can allay terror by promoting and holding their worldview more strongly, and by defending their worldview in the face of opposition and derogating that opposition, in all cases believing or better insuring that their worldview dominates and continues throughout time.

Testing the hypothesis that when mortality is salient, individuals will cling more strongly to their worldviews and deprecate alternative worldviews, Greenberg et al. (1986) presented information that violated participants' worldview. Specifically, Greenberg et al. (1986) exposed municipal court judges to either a mortality salience manipulation in which the judges were asked to respond in writing to two open-ended questions exploring what they thought would happen when they died (Rosenblatt, Greenberg, Solomon, Pyszczynski & Lyon, 1989) or a control manipulation asking similar questions about watching television. After this, participants were asked to assign bail to prostitutes, individuals who violate cultural norms. The results indicated that judges in whom mortality had been made salient assigned higher bail ($M = \$455$) than judges in the control condition ($M = \$50$). Greenberg et al. (1986) offered that the greater punitiveness observed among judges in whom mortality had been made salient was a reaction against the prostitutes' violation of the judges' worldview (e.g. belief in the United States legal code). The judges perpetuated and asserted the dominance of their

worldview and, as a result, buffered themselves from the terror caused by the MS manipulation. The judges' behavior is consistent with an attempt to achieve symbolic immortality because the increased promotion of their beliefs directly promotes the continuation of their worldviews. Furthermore, this experiment indicated that mortality awareness could increase punitiveness or hostility towards individuals who violate one's worldview.

Given the results of Greenberg et al. (1986), Greenberg et al., (1997) reasoned that mortality salience might also increase hostility towards an out-group which holds beliefs and general worldviews that are inconsistent with or alternative to one's own. To test this idea, Greenberg et al. (1997) gave half of their participants an MS manipulation and then had them read essays that were pro-American (worldview-consistent) or anti-American (worldview-opposed). Control participants read identical essays but did not receive an MS manipulation. The results indicated that those participants for whom mortality was salient rated the pro-American essayist more favorably and the anti-American essayist more unfavorably as compared with individuals in the control condition (see also, Greenberg et al., 1990; McGregor et al., 1998). It is important to note, however, that this experiment only demonstrated MS effects on disliking and liking for the *author* of the worldview-opposed versus worldview-consistent essay, respectively. This experiment did not measure, and thus could not detect, any possible influence of MS and essay position on participants' actual worldviews. However, discussions of TMT as well as some limited research, suggest that following MS, worldview-consistent (pro-attitudinal) persuasive appeals should be more accepted than worldview-opposed

(counter-attitudinal) appeals, an under-tested idea forwarded in this thesis (Walsh & Smith, 2007).

Important for validating TMT ideas, subsequent related research demonstrated that the effects of terror induced by MS are qualitatively different from those produced through other forms of anxiety. For example, in an experiment conducted by Greenberg et al. (1994) participants who were asked to think in detail about sources of anxiety such as dental pain or a failure on an exam rather than about their own mortality did not react by providing increased favorable ratings to pro-American authors or increased unfavorable ratings of anti-American authors. These results indicate that MS leads people to have an anxiety-provoking experience that produces effects distinguishable from those produced by other forms of anxiety or fear.

Further research indicates more directly that people also respond to MS by increasing support of their own worldview, not simply by derogating individuals who oppose one's worldview (e.g., Harmon-Jones, Greenberg, Solomon, & Simon, 1996). For example, individuals who are Christians and receive MS manipulations are less willing to hammer a nail using a crucifix (i.e. going against one's religion; Greenberg et al., 1990). Further, Americans are less willing to sift sand out of black ink using an American flag (e.g. going against one's country; Greenberg et al., 1997). This research indicates that people subjected to MS are less willing to denigrate their worldview through improper use of a group symbol, an act which would imply that one's worldview holds little value. When mortality is salient, a threat to any aspect of one's ideals is enough to engender greater amounts of support for a pre-existing worldview. Furthermore, this research

indicates that it is not simply people's evaluations of others that are affected by mortality awareness, but their behaviors as well. Overall, the results of the expanding TMT research support the assertion that people will respond to mortality salience in a unique manner, compared with other anxiety provoking events, and by more strongly supporting their worldviews or more strongly opposing those who offer contrary ideals. Again, these results support the assertion of this thesis that mortality salience could lead to more favorable or unfavorable evaluations of worldview-consistent and worldview-inconsistent persuasive appeals, respectively.

Self-Esteem and Cultural Worldviews

The second way in which cultural worldviews can act as a buffer against the terror spawned from death awareness is by allowing individuals to feel an increased sense of worth when they live up to the values set forth by their culture (Greenberg et al., 1986; Solomon et al., 1991; Tajfel & Bilig, 1974). Individuals who derive self-esteem by living up to cultural ideals or by affiliating with a group will continue to be part of the culture and therefore have the opportunity to obtain literal or symbolic immortality. For example, if one lives up to the culturally prescribed criteria for achieving an afterlife, they will gain a sense of literal immortality. Also, if an individual affiliates strongly with a group, they gain the sense that aspects of themselves will continue after their own death (see Walsh & Smith, 2007). In both cases, individuals can derive feelings of self-worth or self-esteem which indicate to the individual that they are part of, and valued by, their culture. Thus, self-esteem can serve as a buffer against death terror because higher levels of self-

esteem communicate to the individual that they will achieve some form of immortality via their culture. As a result, individuals with increased self-esteem should be less susceptible to death-related terror.

To test the hypothesis that increased self-esteem should decrease death-related terror, Greenberg et al. (1992) examined people's reactions to threats of death after receiving either positive, neutral, or no feedback regarding their performance on an ability task. It was reasoned that positive feedback would increase participants' self-esteem whereas participants who received neutral and no feedback would not experience a rise in self-esteem. Participants then viewed either video footage that made mortality salient (i.e., an autopsy and electrocution) or was neutral. Importantly, participants who viewed the death-related footage experienced less anxiety if they had received positive feedback than neutral or no feedback. Moreover, high-self esteem participants in the MS condition and control participants for all conditions (i.e. those who watched neutral footage and received positive, neutral, or no feedback) had comparable levels of anxiety. This pattern of results was supported in a second experiment by Greenberg et al. (1992) that examined physiological arousal in connection with threat anxiety and self-esteem. The results demonstrated decreased physiological arousal when self-esteem was increased prior to a shock threat. When self-esteem was not increased prior to the threat, physiological responses increased with the presentation of the threat. Given that MS serves as a type of threat against one's well-being, it can be surmised that physiological response to the threat of death should be similar to the pattern described above such that

high self-esteem should serve to buffer the anxiety related to death. Thus, as these experiments indicate, higher self-esteem does seem to serve as a buffer against terror.

Despite the importance of self-esteem in TMT research, the current thesis pertains to how mortality salience might influence acceptance and resistance to worldview/attitude change depending on the nature of a persuasive appeal. To be sure, self-esteem could play a role in determining whether individuals accept or resist the influence of persuasive appeals. For example, following an MS manipulation, individuals with higher self-esteem might not feel threatened by appeals that attack their worldview, and thus might not react against such appeals. Although this and related possibilities are important to consider, the purpose of the current research was first to establish that MS will effect favorable or unfavorable ratings of pro-attitudinal and counter-attitudinal messages.

Summary and Considerations

The research examined thus far illustrates that individuals cling more strongly to their worldviews as a type of security against death-related terror. In particular, when mortality is made salient, individuals dislike and are more punitive against others who express an alternative or opposing worldview and they are less likely to use a cultural symbol in a disrespectful way. As well, when individuals have higher self-esteem, and thus sense that they are living up to cultural ideals and are accepted by the culture, they tend to exhibit less terror and a lower need to support their worldviews when mortality is made salient, presumably because they feel those worldviews are secure. Yet, very little

TMT literature has explored how open individuals are to worldview or attitude change following mortality salience (but see Greenberg et al., 1994; Solomon et al., 2000; Walsh & Smith, 2007). That is, prior research has demonstrated that mortality salience increases dislike for others with opposing viewpoints (See & Petty, 2006), but little research has demonstrated that mortality salience may also increase unfavorable attitudes towards opposing worldviews per se (e.g. counter-attitudinal messages; Walsh & Smith, 2007). Moreover, prior research has demonstrated that mortality salience decreases willingness to use a worldview symbol in a disrespectful way (i.e. indirectly indicating increased worldview support; Greenberg et al., 1997), but no research has demonstrated that mortality salience may also increase liking or support for one's worldviews specifically (e.g. pro-attitudinal messages). It is the purpose of the reported research to test the prediction that individuals in whom mortality has been made salient, relative to those in whom it has not, will form more favorable attitudes toward the topic of a persuasive appeal that supports their worldview (pro-attitudinal) than one that supports an opposing worldview (counter-attitudinal). To more fully explore the possible results MS might have in a persuasive context, the following discussion introduces key persuasion ideas and discusses how those might relate to mortality salience effects.

Persuasion Overview

Persuasion is best thought of as any active attempt to change a person's existing attitude in favor of a more extreme or an opposing attitude (Petty & Cacioppo, 1981). One of the most well-known and influential models of persuasion is the Elaboration

Likelihood Model (ELM; Petty & Cacioppo, 1981; Petty & Cacioppo, 1986). The ELM will be used to explore how MS might influence attitude change beyond what was considered above. The ELM asserts that attitude change (persuasion) can result from effortful (i.e., central route) or relatively effortless (i.e., peripheral route) processing. Which of these two processes will predominately affect attitude change depends on how motivated and able a person is to process the persuasive message (Petty & Cacioppo, 1981; Petty & Cacioppo, 1986; Petty & Wegner, 1998). Attitude change will be influenced by central-route processing if the individual is highly motivated and able to process the message (e.g., the message topic is highly personally relevant and cognitive resources are available; Petty & Cacioppo, 1986; Petty, et al., 1981). The central route is characterized by careful consideration of the message content. If the message contains relevant and strong arguments and as a result, the person is able to generate mostly positive thoughts, then they will tend to form more favorable attitudes (Petty & Cacioppo, 1986; Petty et al., 1981; Petty & Wegener, 1998). Conversely, if the message contains weak and irrelevant arguments and the person is able to generate mostly negative thoughts, then they will form less favorable attitudes (Petty & Cacioppo, 1986; Petty et al., 1981; Petty & Wegener, 1998). That is, when using central processing, people tend to be more persuaded by strong arguments based on rational logic than by weak arguments based on dubious logic (Petty et al., 1981). Furthermore, the quality of thoughts generated by the message recipient will heavily influence the direction and amount of attitude change that occurs, a process known as thought-mediated attitude change. In particular, when individuals are motivated and able to think about message

contents, they will generate more positive thoughts in response to strong arguments (versus weak arguments) and, therefore, form more positive attitudes about the message topic.

When individuals lack the motivation or the ability to process a message, they are unlikely to think carefully about the message and their attitudes are less heavily influenced by the quality of arguments in a message (Petty & Cacioppo, 1981; Petty & Cacioppo, 1986). In this case, attitude change tends to occur via the peripheral route and individuals will instead rely on superficial cues (e.g., characteristics of the author such as attractiveness or characteristics of the message such as the number of arguments presented) or heuristics (e.g., agree with experts) which will allow them to form an attitude without significant thought (Darke & Chaiken, 2005; Petty & Wegner, 1998; Petty et al., 1981).

In an early test of the ELM, Petty et al. (1981) provided participants with a message about a curriculum change that would take place in their university either that year (high personal relevance) or in ten years (low personal relevance). Further, each of these messages contained either strong or weak arguments supporting this curriculum change. Finally, some participants learned that the message was written by an expert (a positive peripheral cue), whereas others learned that it was written by a non-expert (a negative peripheral cue). After reading one of the messages, participants' attitudes toward the curriculum change were assessed. Petty et al. (1981) found that when personal relevance was high, participants formed more favorable attitudes toward the curriculum if it was supported by strong rather than weak arguments, regardless of the author's level of

expertise. Conversely, participants in the low-relevance conditions were swayed more by the expert than the non-expert, suggesting the use of peripheral cues when forming their attitudes about the appeal. That is, these individuals formed more favorable attitudes toward the curriculum if it was supported by an expert than a non-expert, regardless of the quality of the arguments presented. Consistent with subsequent findings, these results indicate that by manipulating personal relevance, it is possible to affect which route--central or peripheral--is likely to influence attitude change (e.g., Darke & Chaiken, 2005; Lieberman, & Chaiken, 1996; Petty & Cacioppo, 1986). Overall, the ELM provides a better understanding of the mechanisms underlying persuasion, which will be useful when examining the potential effects of mortality salience on attitude change.

Possible Roles for MS in the ELM

As discussed earlier, it follows from TMT that MS should increase individuals' acceptance of pro-attitudinal messages and rejection of counter-attitudinal messages. Beyond this, however, it is also possible that MS will influence the extent to which individuals will be motivated to process a message (pro- or counter-attitudinal). Indeed, it is possible that due to an increased need to defend or support their worldview, MS might increase individuals' processing of a message in at least four ways. First, it is possible that MS will increase motivation to process overall because individuals will want to not only support their worldview but also defend their worldview. In this case, individuals rely on central processing and should form more favorable attitudes towards strong versus weak arguments, regardless of the message stance.

Second, it is possible that individuals will be more motivated to defend their worldview from attack, and will thus process counter-attitudinal messages more carefully more than pro-attitudinal messages. In this case, individuals may simply accept the pro-attitudinal messages through use of a peripheral cue (i.e. “It’s consistent with my beliefs”). But, individuals should form more favorable attitudes in response to strong versus weak arguments presented in counter-attitudinal appeals. Third, it is possible that individuals might have an increased desire to support their worldview, and as such, process pro-attitudinal messages more carefully (i.e. central processing) than counter-attitudinal messages. In this case, they may simply dismiss the counter-attitudinal message without any analysis (i.e. “It’s inconsistent with my beliefs”). But, individuals should form more favorable attitudes towards strong versus weak arguments in pro-attitudinal messages whereas this pattern should be absent for counter-attitudinal messages.

Finally, MS might allow individuals to process peripherally overall, in which case the position (stance) of the message simply serves as a cue, much like author expertise (Darke & Chaiken, 2005; Petty & Cacioppo, 1981). In this case, there should be no difference in attitude favorability towards strong versus weak arguments. Thus, individuals in whom mortality is salient, relative to the control participants, should agree with pro-attitudinal messages and disagree with counter-attitudinal messages. In so doing, MS individuals would feel that they are promoting their worldview, but stifling an alternative worldview, without even having to think carefully about doing so. Interestingly, there is a risk involved with thinking too carefully. For example, one might

come to find the message supporting their attitude is weak, or that the message supporting the counter-attitude is strong. Here, people's worldview might be undermined. Thus, it might actually be in individuals' best interest to process peripherally, and therefore avoid the risk of having their attitudes challenged.

As is clear from the above discussion, it is possible to predict several potential ways in which MS might influence individuals' motivation to carefully process a message. All of these possibilities would facilitate individuals' attainment of symbolic immortality through worldview defense. Further, it is possible that any influence of MS on processing motivation might depend on the stance or framing of the message. As a result, no firm prediction will be offered for the extent to which MS might influence processing motivation. Nonetheless, argument quality was manipulated simply to explore which of these possibilities is best supported, opening the door to a better understanding of the mechanisms put into play by MS in persuasive settings.

Importantly, one experiment has investigated whether MS influences motivation for processing a persuasive appeal, although the evidence from this investigation is inconclusive (Solomon, Greenberg, & Pyszczynski, 1995). Solomon et al. (1995) hypothesized that, like personal relevance, MS might increase processing of personally relevant persuasive appeals (i.e., the likelihood of central-route processing). If this is the case, individuals in whom mortality was made salient (versus control participants) should form more favorable attitudes toward the topic of a message if it was supported by strong versus weak arguments. However, if MS does not increase central processing, then participants should be more persuaded by heuristic cues (e.g., author expertise: expert or

non-expert). In the experiment conducted by Solomon et al. participants read an essay concerning the benefits of comprehensive exams (a personally relevant topic), written by an expert (Harvard professor) or non-expert (high school student), and which contained either strong or weak arguments. Prior to reading the essay, participants received either a control or an MS manipulation. After the participants had read the essay, their attitudes toward the exams were assessed. The results indicated that following the mortality salience manipulations, participants were more persuaded by strong than weak arguments, but only when the essay was authored by an expert. These results suggest that MS did lead to careful processing, but only if the essay author was an expert (a positive peripheral cue). Strangely, the opposite effect was found for participants in the control condition. That is, control participants were more persuaded by strong versus weak arguments when the author was a non-expert but *not* when the author was an expert. These results, like those found for the MS condition, are surprising because personal relevance should have led to increased central processing regardless of author status. As will be discussed shortly, the results of this study are not only inconsistent with persuasion literature but are highly inconclusive with regards to the potential motivating influences of MS on message processing.

One problem with the Solomon et al. (1995) experiment is that there was no effect of strong versus weak arguments found in the non-expert condition for mortality salient participants. If MS increases processing motivation then strong arguments should also have produced more favorable attitudes than weak arguments even when delivered by a non-expert (see e.g., Petty et al., 1981). One explanation for this pattern is that expertise

acted as an argument in and of itself. However, for this to be the case, strong arguments should have still received more favorable evaluations than weak in the expertise condition for *both* MS and control participants. The fact that there was no difference in attitude favorability for strong versus weak arguments in two of the conditions seems to suggest that participants were using peripheral processing when the author was non-expert, simply relying on cues such as author status to form their attitudes. Unfortunately, the confusing results found for control participants further obscures any predictions about how MS might increase processing of persuasive messages. Given that Solomon et al. (1995) were not able to demonstrate central processing of personally relevant messages (i.e. found no argument quality effect for the expert essays) in the control condition, it seems possible that any difference found between the control and MS conditions were merely a result of data noise.

Despite over 20 years of TMT research, it is still not known if changes in worldview will increase following mortality salience. Specifically, past research on worldview defense has focused on three factors: participants' liking (or disliking) of the source of an opposing message; liking (or disliking) of the people who violate a participant's worldviews (Greenberg et al., 1986); and, finally, a willingness to derogate worldview symbols (Greenberg et al., 1997). Very little past research has focused on evaluations of messages directly (but see Solomon et al., 1995). Though Solomon et al. (1995) attempted to explore this issue their results were contradictory and ultimately inconclusive. However, according to discussions about TMT, MS could influence attitude favorability for pro- versus counter-attitudinal messages perhaps due to a greater need to

promote one's worldviews. Another interesting question that has not been fully addressed by the TMT literature is how MS influences motivation to process an appeal. Thus, the impetus for the current experiment was to explore these unanswered questions, ultimately providing greater understanding of mortality salience effects.

EXPERIMENT OVERVIEW

An experiment was conducted in which participants received either a mortality salience manipulation or a control manipulation. Next, participants read an essay regarding a topic that was pro- or counter-attitudinal and was supported by either strong or weak arguments. Participants were then asked to report their attitudes toward the topic of the message as well as their thoughts while reading the message. The current experiment was designed to test two main predications. First, the current study sought to test if MS participants, relative to control participants, would form more favorable attitudes towards pro- versus counter-attitudinal messages. Second, it was hypothesized that mortality-salient participants, versus control participants, would form more favorable attitudes towards pro-attitudinal messages but would form more unfavorable attitudes towards counter-attitudinal messages. This study also examined the ancillary hypotheses that, across conditions, participants would form more favorable attitudes towards pro-attitudinal messages than counter-attitudinal messages and more favorable attitudes towards strong versus weak arguments. On an exploratory level, the current study also examined if and how mortality salience might effect motivation to process a persuasive appeal by looking at participants' favorable (unfavorable) attitudes towards strong versus weak arguments.

Hypotheses

Hypothesis 1: It is expected that the difference between favorable evaluations for pro-attitudinal messages and unfavorable evaluations for counter-attitudinal messages will be more pronounced for MS participants than for control participants.

Hypothesis 2: Compared to control participants, participants in whom mortality has been made salient are expected to form more unfavorable attitudes toward a counter-attitudinal message and more favorable attitudes toward a pro-attitudinal message.

According to TMT discussions (e.g., See & Petty, 2006; Solomon et al., 1995), the need for worldviews, and the opportunities for immortality that they afford, is amplified under MS. According to Hypothesis 2, MS should increase liking for pro-attitudinal messages but decrease liking for counter-attitudinal messages. By increasing favorable evaluations for pro-attitudinal messages individuals would demonstrate stronger support for their worldviews. Conversely, increasing unfavorable evaluations of counter-attitudinal messages could act as a type of alternative-worldview derogation, allowing individuals to flaunt the relative superiority of their own worldviews. Thus, given that individuals experiencing mortality salience have an increased desire to support their worldviews or to denigrate opposing worldviews, it is likely that they should form more favorable attitudes towards pro-attitudinal messages, relative to control participants, as well as more unfavorable attitudes towards counter-attitudinal messages as compared to control participants (Hypothesis 2). Finally, given that the predictions of Hypothesis 2 are correct, it follows that Hypothesis 1 must also be true. However, even if Hypothesis 2

is not true, a more pronounced difference in attitude favorability for pro- versus counter-attitudinal messages between the MS and control condition would support Hypothesis 1.

Hypothesis 3: An overall effect of message stance is expected such that pro-attitudinal messages receive more favorable evaluations than counter-attitudinal messages.

Substantial persuasion literature supports the hypothesis that pro-attitudinal messages are viewed more favorably than counter-attitudinal messages (Geers, Handley, McLarney, 2003; Handley & Lassiter, 2002; Wegener, Petty, & Smith, 1995). Thus, these previous findings should replicate in the present experiment for both MS and control conditions.

Hypothesis 4: An overall effect of argument quality is expected such that attitude favorability should be greater following strong arguments than weak arguments.

Research in the persuasion field has indicated that strong arguments generate more favorable attitudes than weak arguments when a message is personally relevant (Petty & Cacioppo, 1986; Petty et al., 1981). Thus, given personally relevant messages were used in the present experiment, this is a clear prediction from the ELM literature.

It is important to note that, as discussed earlier, research combining TMT and persuasion has yielded inconclusive support for the idea that MS might increase or decrease message processing. Further, TMT can be used to formulate several conflicting predictions in this regard. Thus, on an exploratory basis, the current study investigated the several possible processing influences MS might produce in combination with pro- and counter-attitudinal messages. As discussed above, MS might increase motivation to process a message due to an increased need to defend or promote a personally relevant

topic. In this case, processing would take place via the central route and more favorable attitudes should be found for strong versus weak arguments regardless of the stance of a message. Another possibility is that MS will lead participants to passively accept or reject the appeals (i.e. decreases motivation). In this case, participants should rely on peripheral processing and thus be more influenced by the stance of the appeal (a peripheral cue) such that participants would simply agree with pro-attitudinal messages and disagree with counter-attitudinal messages. Finally, MS could lead to a combination of the two processing techniques resulting in increased central processing of pro-attitudinal messages while increasing peripheral processing of counter-attitudinal messages or visa versa. No predictions were made regarding interactions between MS and argument quality because each of the above possibilities has some theoretical support. However, the design of the current study should provide some preliminary support for at least one of these possibilities. Also to this end, the amount of effort and attention used to process the appeals was assessed. As well, participants were asked to indicate the thoughts they generated while reading the appeal. These measures will be discussed in greater detail below. Ultimately, beyond the expected main effect of argument quality, it is unknown just how mortality salience, argument quality, and message stance will interact together.

METHODS

Participants and Design

The current experiment was constructed using a 2 (Mortality Salience: salient vs. not salient) x 2 (Message Stance: pro-attitudinal vs. counter-attitudinal) x 2 (Argument Quality: strong vs. weak) between-participants design. One hundred ninety-seven students (108 females, 89 males) attending Montana State University participated in the experiment for partial course credit in an introductory psychology course. Participants ranged in age from 18 to 34 ($M = 20.49$, $SD = 2.80$), with 83% reporting their ethnicity as Caucasian. The data for six participants was unavailable for analysis because of computer malfunctions during their session.

Procedure

Upon entering the laboratory, participants were greeted by the experimenter, seated at individual computers, and asked to read and sign consent forms for the experimental session. Subsequent stimuli were presented, and participant responses recorded, on the computer using MediaLab software (Jarvis, 2006). Next, participants were asked to follow the instructions presented on the computer monitor. At this time, participants were informed that they were participating in an experiment to discover how people write, read, and comprehend different arguments and topics. Next, via random assignment, participants were asked to answer one of two possible pairs of questions. One pair of questions served as the mortality salience manipulation, asking participants to

write in detail about their anticipations regarding death (see details below). The other pair of questions served as a control manipulation, asking participants to describe their anticipations regarding their next exam (see details below). After answering the two questions, participants completed an abbreviated version of the Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988) which required participants to indicate the extent to which they experienced each of five emotion pairs (e.g., pleasant/unpleasant, lethargic/energized) represented on five response scales. The PANAS is a commonly used measure of affect (i.e. emotion), and was included to assess any possible differences in experienced affect produced by the mortality salience and control manipulations.

After completing the PANAS, the computer instructed participants to retrieve a word search puzzle located in a marked envelop on top of their computer. The puzzle contained neutral words (e.g. “station,” “program”) and has been used extensively in previous research to provide individuals time to redirect their attention away from death (Landau et al., 2004; Pyszczynski et al., 1999; Solomon et al., 1991). As demonstrated by previous TMT research, worldview defense only occurs when there is a delay between the death reminders and the opportunity for worldview defense. That is, peoples’ initial response to death-related thoughts is to push them into the unconscious. However, by attempting to push thoughts of death into the unconscious, individuals actually increase the salience of these thoughts *in* the unconscious therefore leading to an increased reliance on worldview support to dissipate death-related terror (Arndt et al., 1997; Wegner, 1994).

After completing the puzzle, participants were told that the argument comprehension experiment would begin. Participants were then presented with one of four essays discussing a new tuition plan that would give students either the option of work study jobs as a form of tuition assistance at Montana State or would force students to participate in work study jobs in order to avoid having to pay out-of-state tuition. Research employing these messages has validated that these essays are viewed as pro-attitudinal or counter-attitudinal, and contain either strong or weak arguments (Geers et al., 2003; Handley & Lassiter, 2002; Wegener et al., 1995). All essays followed the same structural format. Participants were instructed that they should read the essay carefully as they would afterward be asked a series of questions. Once the participants finished reading the essay, they completed several items measuring their attitudes about the topic of the message, how much effort they employed when reading the message, and how much they paid attention while reading the essay. Participants were also asked to record the thoughts they generated while reading the message, and were subsequently asked to rate the valance of each reported thought.

Once participants completed this portion of the experiment, they then completed a second, unrelated portion, after which they answered a series of scaled questions from the Need for Cognition scale (NFC; Cacioppo & Petty, 1982). This measure is used to explore the extent to which participants enjoy thinking about complex problems. This measure was included for exploratory purposes, the results of which will not be reported extensively in this thesis. Demographic information (e.g. race, gender, age) was also collected at this time. Finally, participants read and signed all debrief forms located in a

folder at their work station. Once participants handed the signed debrief forms to the experimenter, they were thanked for their participation and dismissed.

Independent Variables

Mortality Salience

In line with past TMT research, participants were randomly assigned to receive one of two pairs of questions. One pair was designed to render mortality salient by asking participants to “Please briefly describe the emotions that the thought of your own death arouses in you” and “Jot down, as specifically as you can, what you think will happen to you as you psychically die and once you are physically dead” (Rosenblatt et al., 1989, p.682). The control questions was designed to elicit arousal independent of mortality salience by asking participants to “Please briefly describe the emotions that the thought of your next exam arouses in you” and “Jot down, as specifically as you can, what you think will happen to you physically as you take your next exam” (Greenberg et al., 1994). The computer provided a text box into which participants typed their responses following each question.

Message Stance

After randomly receiving one of the two mortality salience manipulations and completing a word-search puzzle, participants were randomly assigned to read a message advancing one of two stances. One stance, the pro-attitudinal stance, advocated a position that was presumed consistent with students pre-existing attitudes, that students would be

given the *option* of work study jobs as tuition assistance. Conversely, the counter-attitudinal stance was inconsistent with participants' attitudes. These essays described a tuition plan, to be implemented at the participants' university, such that students would be *forced* to participate in work study programs; those students who did not choose work study jobs would be required to pay out-of-state tuition.

Argument Quality

Cross-cutting message stance, the messages contained identical strong or weak arguments. Strong arguments are typified as logical and more compelling (e.g. "The tuition plan will increase the quality of the faculty and the courses offered"), whereas weak arguments are often based on opinion and have limited relevance (e.g. "The tuition plan will lead to a substantial reduction in leisure time").

Manipulation Checks and Dependent Variables

Affect Check

The PANAS (Watson & Clark, 1994) measured participants' experienced affect following the MS or control manipulation. This measure was included to determine if there were differences in affect between these two conditions (Greenberg et al., 1994). It is possible that the MS manipulation would induce more intense negative affect than the control manipulation regarding a future exam. If this is the case, it would be unclear if potential effects of the MS manipulation are due to more extreme negative affect or to mortality salience per se. Thus, the PANAS was employed to determine if the same level

of negative affect was induced by the MS and control manipulation, as is anticipated based on previous research (Arndt et al., 1997; McGregor et al., 1998). Participants were asked to respond to the question “I currently feel” on five scales anchored at 1 (lethargic; bad; unpleasant; negative; restless) and 9 (energized; good; pleasant; positive; content, respectively). In order to analyze the results of the abbreviated PANAS, participants’ responses to the five scales were added together to form an overall affect rating, with lower numbers indicating more negative affect and higher numbers indicating more positive affect.

Attitude Measure

After participants read the tuition-plan essay, they were asked to respond to the stem “The position discussed within the essay is” on two scales anchored from 1 (bad; harmful) to 9 (good; beneficial, respectively). These two significantly correlated items were summed to form the main attitude measure, $r = .645, p < .01$.

Thought Index

Participants were asked to list any thoughts that they had while reading the essay. After they reported up to 10 thoughts, the computer independently presented each thought to participants and asked them to rate the positivity of each on a scale anchored from 1 (negative) to 9 (positive). Furthermore, each thought was assessed using the following criteria: if the thought was rated as a five on the response scale, it was counted as neutral; if the thought was rated as greater than five on the response scale, it was counted as positive; and if the thought was rated as less than five on the response scale, it

was counted as negative. A traditional thought index was constructed which examined the proportion of positive to negative thoughts over the total number of thoughts (i.e., $\text{positive thoughts} - \text{negative thoughts} / \text{total thoughts}$).

Effort and Attention Measure

Following the essays, participants were asked to indicate how much effort they used while processing the message as well as how much they paid attention to the message. Participants were asked to respond to both questions using a scale anchored from 1 (very little effort; did not pay attention) to 9 (a lot of effort; paid a great deal of attention). Responses to each item were examined independently.

RESULTS

Affect Manipulation Check

Responses to the PANAS were entered into an Analysis of Variance (ANOVA) in which mortality salience, message stance, and argument quality served as factors. The analysis revealed no significant difference between the MS and control conditions, $F(1, 191) = 1.28, p > .20$, nor any other significant effects (all other $ps > .23$). As anticipated, this former null result indicates that having individuals consider their death (the MS manipulation) produces comparable levels of negative affect as having them consider their next exam (control condition).

Attitude Measure

The attitude measure was entered into the same ANOVA as used above. The results of this analysis revealed main effects of argument quality, $F(1, 191) = 45.83, p < .001, \eta_p^2 = .18$, and message stance, $F(1, 191) = 40.44, p < .001, \eta_p^2 = .20$, such that messages containing strong arguments ($M = 12.37, SD = 3.01$) and pro-attitudinal messages ($M = 12.36, SD = 3.22$) lead to more favorable attitudes than did messages containing weak arguments ($M = 9.70, SD = 4.11$) and counter-attitudinal messages ($M = 9.39, SD = 3.91$), respectively. These results indicate, as predicted by Hypotheses 3 and 4, that the strong arguments were more persuasive (i.e., compelling) than the weak arguments, and that participants generally formed more favorable attitudes about the assumed pro- versus counter-attitudinal message. These results are consistent with prior

research (e.g., Geers et al., 2003; Handley & Lassiter, 2002; Wegener et al., 1995) and the notion that argument quality and message content was successfully manipulated in the present experiment.

Importantly, the interaction between mortality salience and message position that was predicted in Hypothesis 1 was significant, $F(1, 191) = 4.30, p = .039, \eta_p^2 = .02$. That is, participants whose mortality was made salient formed less favorable attitudes toward the counter-attitudinal ($M = 8.36, SD = 3.55$) versus pro-attitudinal ($M = 12.45, SD = 3.61$) tuition plan relative to participants in control conditions ($M_s = 10.02$ vs. $12.32, SD_s = 3.91$ vs. 3.00). Exploring this interaction further, planned comparisons were conducted and revealed that individuals formed more favorable attitudes towards pro-attitudinal versus counter-attitudinal essays in the control condition, $t(183) = 3.85, p < .001$, and in the MS condition, $t(183) = 5.58, p < .001$, although per the significant interaction, this difference was greater for participants in the MS conditions. To directly test Hypothesis 2, further planned comparisons were constructed in which the MS condition was compared to the control condition for pro-attitudinal and counter-attitudinal messages separately. Consistent with Hypothesis 2, individuals in the MS condition formed significantly less favorable attitudes than individuals in the control condition when reading counter-attitudinal messages, $t(183) = 2.72, p = .01$. However, inconsistent with Hypothesis 2, individuals in the MS condition did not form more favorable attitudes than individuals in the control condition to the pro-attitudinal messages, $t(183) = 1.11, p = .91$.

Although not predicted, the analysis also revealed a marginally significant interaction between mortality salience and argument quality, $F(1, 191) = 3.49, p = .06$,

$\eta_p^2 = .02$, such that strong arguments ($M = 12.35$, $SD = 3.37$) were seen as slightly more favorable than weak arguments ($M = 8.56$, $SD = 3.96$) for mortality salient participants relative to the control participants ($M = 12.38$, $SD = 2.78$; $M = 10.31$, $SD = 4.01$). If this marginal interaction is indicative of a difference in motivation to process messages between the control versus MS conditions, then this interaction should be supported by the thought and effort measures as well. No other interactions approached significance, all $F_s < 1.55$, all $p_s > .214$ (see Table 1 for all means).

Table 1*Means and Standard Deviations for All Conditions*

<i>Argument Strength</i>	<i>Condition</i>							
	<i>Mortality Salience</i>				<i>Control</i>			
	<i>Pro-attitudinal</i>		<i>Counter-attitudinal</i>		<i>Pro-attitudinal</i>		<i>Counter-attitudinal</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Strong	14.26	2.77	10.33	2.79	13.03	2.40	11.62	3.01
Weak	10.63	3.50	6.00	2.90	11.71	3.35	8.59	4.27

Thought Index

Analysis of the thought index did not yield any significant effects, all $F_s < 1.02$, all $p_s > .314$). Contrary to what the ELM would predict, there was no significant main effect for argument quality. The results suggest fairly directly that MS did not lead participants to think more carefully about the arguments presented in the essays. If MS, compared with the control manipulation, did lead to more thinking about the message, individuals should have generated proportionately more positive thoughts following

strong versus weak arguments. Thus, the null results for the thought index are inconsistent with the marginal interaction between MS and argument quality, suggesting that MS did not increase careful processing.

Effort and Attention Measure

Responses to the effort item and attention item were independently entered into ANOVAs identical to those used above. The results for the effort measure indicated only a significant main effect for mortality salience, $F(1, 191) = 4.22, p = .043$ (all $F_s < 1.87$, all $p_s > .174$), such that MS participants employed significantly less effort when reading the essays ($M = 6.24, SD = 1.74$) than did control participants ($M = 7.06, SD = 1.88$). This result suggests that MS might have increased reliance on peripheral processing, a possibility discussed below. The analysis of the attention item yielded only a significant main effect of argument quality such that participant reported paying more attention to strong versus weak arguments, $F(1, 191) = 5.29, p < .03$, all other $F_s < 1.47, p_s > .25$. Consistent with the results of the thought index, the results for the effort and attention measures used in this experiment indicate no statistical support for the idea that mortality salient participants were processing the messages more carefully.

Exploratory Analyses

In addition to the results reported above, ancillary analyses were conducted to explore how need for cognition (NFC) might have interacted with the reported results. Need for cognition, which examines how much people enjoy thinking about complex

problems, could illuminate if MS caused participants to think more or less carefully about the persuasive appeals. For example, it is possible that any increase in processing motivation due to MS will be easier to detect in individuals low in NFC. As well, it is possible that any decrease in processing motivation due to MS will be easier to detect in individuals high in NFC. A median split was conducted on participants need for cognition score such that all response under 5.39 (on a 9-point scale) were considered to represent those low in NFC whereas all responses above 5.39 were representative of those high in NFC. An ANOVA was constructed to explore the effect on attitudes of NFC in combination with mortality salience, message stance, and argument quality. This analysis revealed only a marginally significant interaction between NFC and MS such that participants in the MS condition relative to control condition reported less favorable attitudes if they were low versus high in NFC, $F(1, 191) = 3.74, p = .06$. No other effects approached significance, all $F_s < 2.41$, all $p_s > .122$.

Further analyses examining the correlation between the attitude and thought measures within each of the eight conditions created by the three factors MS, message stance, and argument quality. These analyses were conducted in order to examine if higher quality of thoughts were related to attitude formation on any level. None of these correlations were significant, all $r_s < .132$, all $p_s > .167$, indicating that quality of thoughts did not influence attitude formation in any of the conditions. This finding further supports the assertion that the marginally significant interaction between argument quality and MS may not be indicative of a difference in processing.

DISCUSSION

Over twenty years since its conception, Terror Management Theory continues to be a heavily researched area of psychology. TMT research has now expanded to explore people's reaction to death in many areas, including aggression and consumer behavior (e.g. Ferraro et al., 2005; Shehryar & Hunt, 2005; Solomon et al., 2000). Yet, persuasion has been one area of psychology that has received scant attention from TMT researchers. Persuasion examines factors that contribute to individuals' openness or resistance to attitude change (Landau et al., 2004; McGregor et al., 1998). Moreover, until this study, the majority of worldview defense research had only demonstrated favorable (or unfavorable) evaluations of the source of the message (e.g. author) and had not studied attitudes regarding the message itself. Specifically, within in the TMT literature very little research has examined how MS affects individuals' favorable or unfavorable evaluations towards worldview-inconsistent messages. Given that one central tenet of TMT is that individuals strongly hold on to their beliefs as well as strongly counter alternative beliefs in order to overcome the terror induced by mortality awareness, the current thesis proposed that this outcome would manifest attitudinally when individuals are presented with persuasive messages.

The current experiment was designed to examine if attitude change would occur to a greater extent for participants experiencing mortality salience. Specifically, this thesis was constructed to examine two central hypotheses (Hypotheses 1 and 2) and two ancillary hypotheses (Hypotheses 3 and 4). Hypothesis 1 suggested, and the reported

results confirm, that mortality-salient participants, compared to control participants, formed more favorable attitudes to pro-attitudinal messages relative to the counter-attitudinal messages. These results are some of the very few to demonstrate that MS increases unfavorable attitudes towards persuasive appeals based on the stance advanced within the message (see Solomon et al., 1995; Walsh & Smith, 2007). Furthermore, these results support the assertions that under mortality salience, people do not simply dislike a person who holds an opposing worldview, but they dislike the opposing worldview itself.

Hypothesis 2 predicted that, relative to control participants, participants experiencing mortality salience would indicate more favorable attitudes regarding the pro-attitudinal essay and more unfavorable attitudes regarding the counter-attitudinal essay (e.g. Hypothesis 2; Greenberg et al., 1997; Solomon et al., 2000). Results indicated that mortality-salient participants did form significantly more unfavorable attitudes for the counter-attitudinal messages than did control participants.

Interestingly, and contrary to Hypothesis 2, the reported experiment did not demonstrate that mortality-salient participants formed more favorable attitudes for pro-attitudinal messages than did control participants. Rather, participants in both the control and mortality-salience conditions found the pro-attitudinal message equally favorable. Interestingly, past TMT research does not provide a specific explanation for this finding. Although TMT research has demonstrated that individuals “cling” more strongly to their worldviews following MS (e.g., Pyszczynski et al., 1999), it is unclear whether MS causes people to change their *evaluations*, either favorably or unfavorably, of those worldviews (Greenberg et al, 1997; Solomon et al., 2000). Perhaps MS participants

simply hold their worldviews as being more important but do not actually increasing their favorability for their worldview. That is, it may be enough for a person to simply state their support for a worldview while not actually increasing their favorable evaluation of that worldview. Unfortunately, this distinction has not been directly tested within the TMT literature, as will be discussed in greater detail below. Yet, the results of the current experiment suggest that MS may simply cause an increase in how strongly held or important a worldview is but MS does not appear to change the direction or magnitude of the pre-existing attitude. Another possible explanation for these results is that individuals' terror was allayed by learning that others held their current attitude. As a result, they did not need to more strongly agree, over and above control participants, with the pro-attitudinal message, as their sense of terror had been already reduced by attitude consensus. Indeed, past research has demonstrated that attitude consensus (i.e. believing that others share one's belief) can act in much the same way as worldview defense to diffuse terror (see Greenberg et al., 1997). Further research would be necessary to eliminate one or both of these possibilities.

As expected, this study was able to replicate overall effects of argument quality and messages stance (Hypotheses 3 and 4; Petty & Cacioppo, 1986; Solomon et al., 1995). That is, participants formed more favorable attitudes after reading pro-attitudinal messages than counter-attitudinal messages and participants formed more favorable attitudes towards strong versus weak arguments. Also explored in this experiment was how argument quality might interact with mortality salience, thus indicating increased or decreased motivation to process an appeal. Interestingly, the interaction between MS and

argument quality was marginally significant for the attitude measure such that mortality-salient participants formed slightly more favorable attitudes towards strong versus weak arguments. Thus, there is some slight evidence that MS might increase message processing, regardless of the stance forwarded within the message. However, no significant interactions were found between MS and argument quality on other indications of processing motivation such as the quality of thought generated about the message, reported effort in processing the message, or reported attention to the message. Thus, the preponderance of the evidence gathered in the reported experiment is that MS did not increase motivation to process. Yet, the marginal interaction found for the attitude measure is noteworthy. One explanation for these findings that does not involve increased processing motivation is that participants in the MS conditions actually used argument quality as a peripheral cue. That is, rather than thinking carefully about the message, they simply noted that the arguments seemed reasonable or weak, and thus reported more or less favorable attitudes toward the message based on a non-effortful processing strategy.

Interestingly, the lack of clear evidence that MS influenced processing motivation is consistent with the dual-process model of mortality defense (Pyszczynski et al., 1999). The dual-process model asserts that when individuals are conscious of mortality, they will respond by actively ‘pushing’ that threat into their unconscious. This rational and threat-oriented process of ‘pushing,’ known as proximal defense, is done through creation of death counter-arguments (e.g. “I’m very young, I won’t need to worry about this for a long time”) or through distraction, such as focusing on a task (e.g., the word-search

puzzle used in the reported experiment). Pyszczynski et al. assert that once the threat is pushed into the unconscious, distal defenses are used to suppress and eventually disperse the threat. Distal defenses are characterized by attempts to increase self-esteem and by the desire to maintain belief in one's worldviews. Thus, worldview defense only occurs once the threat is in the unconscious.

The connection between the dual-process model of mortality defense and the current study revolves around redirection of attention. Given that this study employed a distracter task (word search puzzle), it is likely that the death-related terror had been pushed into the unconscious by the time participants were presented with the persuasive appeal (as intended). The dual-process model argues that as long as there is conscious monitoring of thoughts, individuals strive to appear rational and consistent, and thus must defuse terror through logic (Pyszczynski et al., 1999). Therefore, when proximal defenses are activated, effects resulting from argument quality would be expected because they require logical thought. On the other hand, distal defenses simply require rejection of terror on an abstract level (Pyszczynski et al., 1999). In the reported experiment, distal defenses should have been activated by the delay. Thus, participants would merely need to dismiss the validity of any counter-attitudinal statements negating any argument quality effect. Results indicating a lack of strong argument quality effects as well as a non-significant difference between the thoughts generated in each condition could support this interpretation.

Overall, the results of the reported experiment indicate that the difference in attitude favorability for pro- and counter-attitudinal messages was more pronounced in

the MS versus the control condition (Hypothesis 1). Furthermore, mortality-salient participants, compared to control participants, indicated significantly more unfavorable attitudes in regards to counter-attitudinal messages, consistent with Hypothesis 2. But, inconsistent with Hypothesis 2, there was no difference between mortality salience and control participants in attitude favorability for pro-attitudinal messages. Finally, preliminary findings suggest that MS does not increase processing motivation for persuasive appeals. Overall, processing of persuasive appeals under mortality salience is an area of research that deserves further exploration.

Implications, Limitations and Future Directions

The findings of the reported experiment have some interesting implications for the future of TMT and persuasion research. The results of this current experiment appear to be somewhat inconsistent with the ELM. Specifically, the ELM predicts that central processing should manifest itself in an argument quality effect such that more favorable attitudes are formed for strong versus weak arguments (Petty & Cacioppo, 1981). Moreover, this argument quality effect should be mediated by a thought effect such that more positive thoughts should result in more positive attitudes. Conversely, more negative thoughts should result in more negative attitudes (Petty & Cacioppo, 1986). Though the current experiment was able to demonstrate an argument quality effect for attitude formation, the results did not show the expected thought mediated effect on attitudes. Indeed, despite that marginally significant interaction between MS and argument quality for attitude formation, participants in all conditions reported a similar

proportion of positive to negative thoughts. That is, the more positive attitudes for strong versus weak arguments found in the MS condition were not accompanied with a greater number of positive thoughts as predicted by the ELM.

One possible explanation for these results is that argument-quality effects may not always be representative of central processing. Supporting this assertion is the fact that MS participants reported using less effort to analyze the appeals, yet seem to demonstrate somewhat greater argument quality effects. According to the ELM, central processing requires *effortful* and rational thought, which is then reflected in an argument quality effect for attitudes. Therefore, given that MS participants did form more favorable attitudes for strong versus weak messages but were not forming more positive thoughts or using more effort to process, it seems possible that argument quality effects are not a perfect measure of central processing. Clearly, there could be some instances under which argument quality effects do reflect central processing; however, the ELM must be modified to specify under what conditions this will occur. Indeed, what the current research demonstrates is that under MS, argument quality effects for attitudes do not reflect central processing. That is, while central processing may still occur under MS, it is clear that under this circumstance thought-mediated argument quality effects are not the most accurate representation of this process. Overall, based on the findings of the current experiment, future research exploring the ELM should be modified to include different or more accurate measures of central processing.

The current experiment has also highlighted some unanswered within the current TMT literature that should be considered in future investigations. Specifically, TMT

research has failed to fully address how MS might influence attitude change for worldview-consistent messages. Though the research asserts that individuals will “cling” more strongly to their worldviews following MS, it does not indicate whether this increased support will be coupled with an increase in attitude favorability. For instance, MS could simply increase the value of worldview-consistent information while not changing the strength or direction of a person’s evaluation of this information. That is, it may be enough for individuals, trying to overcome terror, to demonstrate their support for their worldviews while not actually increasing the strength of their evaluations. An experiment comparing individuals’ pre- and post-test evaluations on a topic could verify that MS does not change the strength of worldview evaluations.

Another possibility under TMT is that MS could lead to an increase in attitude favorability for worldview-consistent information. That is, individuals may actually increase their favorable evaluations of a relevant worldview. For this to be true, an experiment measuring pre- and post-test attitudes would have to demonstrate an increase in reported attitude favorability. However, given the results of the current experiment, it appears that MS does not increase favorable ratings for pro-attitudinal messages over what would be normally anticipated. Yet, future research addressing whether MS influences the strength or direction of worldview evaluations is needed before the results of the current experiment can be fully supported.

Future research exploring the results of the reported experiment could also overcome some of the limitations of this experiment. One possible limitation of this experiment is that a stronger argument quality effect, found for the attitude measure, was

absent under MS, not because of increased reliance on peripheral processing but because the topic discussed within the appeals was not interesting enough to promote participants careful processing. This assertion seems unlikely, given that the reported amount of attention used to process the appeal was relatively high across both conditions and given that there was an argument quality main effect found for the attitude measure. Another limitation of this experiment to be considered in future research is the lack of a self-esteem measure (Rosenberg, 1965). Past TMT has used self-esteem scales extensively to verify that, following MS, worldview defense does increase self-esteem back to baseline levels (Arndt et al, 1997; Greenberg et al., 1992). However, the current experiment was unable to verify this result. Thus, replications of this study should include a measure of self-esteem to explore how this factor may have interacted with MS.

An interesting possibility for future research would involve manipulating participants' self-esteem. Of specific interest would be whether the effects of the current experiment could be negated by artificially inflating participants' self-esteem prior to the presentation of the appeals. Past TMT research has demonstrated that MS effects do not manifest for individuals with high self-esteem (see Greenberg et al., 1997). To test this possibility, participants could first be exposed to a mortality or control manipulation and then be given bogus feedback on an intelligence task such that some participants would receive positive feedback whereas other participants would receive neutral or no feedback. Following this bogus feedback, participants could be asked to read pro- or counter-attitudinal messages. If self-esteem does serve as a buffer against terror, then high self-esteem participants should not differ significantly in their ratings of pro- versus

counter-attitudinal messages. Thus, the effects reported in this thesis should disappear following increases in self-esteem.

Additionally, understanding how MS influences openness or resistance to attitude change has important implications for not only TMT and persuasion research but also for other areas of psychology. Future research looking at mortality salience and openness (or resistance) to persuasion could extend into using real-world MS manipulations. One possible experiment could focus on how MS manipulations are manifested in everyday persuasive appeals, such as advertising or product marketing. In reality, consumers are not asked to write about their death and then purchase products. Thus, it would be interesting to examine at how subtle reminders of death (e.g. skeletons, ghosts, coffins) embedded in advertisements or labels would influence consumption based on pre-existing attitudes or consumer preferences. Further, given that mortality salience decreases attitude favorability for counter-attitudinal messages, it could be that MS reminders on products decrease the likelihood of consumers switching to competing brands. Overall, it remains apparent that thoughts of death lead to unique and interesting psychological and behavioral responses.

CONCLUSIONS

The reported experiment indicates MS influences the rejection of a persuasive appeal. Specifically, it was found that an MS decreases attitude favorability for counter-attitudinal messages. Interestingly, the reported experiment was unable to demonstrate a significant difference in favorable ratings for pro-attitudinal messages between mortality-salient participants and control participants. Furthermore, this study explored if and how MS increases motivation to process appeals. Prior to this experiment, research had mainly demonstrated increased dislike, under MS, for others who hold opposing worldviews. Unfortunately, the few experiments that have addressed liking for the message itself have provided confusing results (but see Solomon et al., 1995). The results of the reported experiment are therefore some of the first to provide evidence that MS also increases unfavorable attitudes for the message itself. Not only does the current experiment provide continued understanding of the effect of MS on people's thoughts and behaviors, but it also demonstrates the need for further research examining TMT using a persuasion framework.

In order to better understand the unique phenomenon associated with death, it is important to understand both the processes people use to deal with death and to what ends. By continuing the research that Greenberg et al. (1986) began over two decades ago, it is possible to understand just how far the effects of death avoidance reach. Mortality salience can both compel individuals to act in an openly aggressive manner towards others but can also increase liking for in-group members (See & Petty, 2006).

However, only by appreciating our reactions to death, can we ever truly transcend our fear of it.

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