Terror Management Theory: Interplay between Mortality Salience, Death-Thoughts, and Overall Worldview Defense

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TERROR MANAGEMENT THEORY: INTERPLAY BETWEEN
MORTALITY SALIENCE, DEATH-THOUGHTS, AND
OVERALL WORLDVIEW DEFENSE

by

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ABSTRACT
TERROR MANAGEMENT THEORY: INTERPLAY BETWEEN MORTALITY
SALIENCE, DEATH-THOUGHTS, AND
OVERALL WORLDVIEW DEFENSE

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This study examines both the generalizability of Terror Management Theory (TMT) and the mechanisms by which individual difference variables work in the TMT model. A plethora of research exists to support TMT, a theory that explains much of human behavior as attempts to buffer the potential for anxiety provoked by being aware of one's own inevitable mortality (Pyszczynski et al., 2003). This dissertation investigated the generalizability of Terror Management Theory (TMT) and the mechanisms by which individual difference variables work in the TMT process. In order to do so, an operationalization of the variable "overall worldview" was provided. Participants consisted of 367 college students from the Psychology Department Experimental Subject Pool of a mid-sized Midwestern university. Subjects were quasi-randomly assigned to a 2 (mortality salience vs. control) x 2 (death-thought word stems vs. neutral word stems) between subjects design. Results suggested that humanists defended humanism more in the mortality salience condition than in the dental pain condition. However, mortality salience did not increase the defense of the normative worldview for normatives. Contrary to expectations, humanists and normatives defended their respective worldviews to an equivalent extent in the mortality salience condition. Mortality salience did not lead to defense of the American worldview for normatives or for humanists. Participants in the mortality salience condition, humanists, and normatives did not differ on the number of accessible death-thoughts in either the mortality salience or the dental pain condition. Despite methodological limitations, this study suggests that, at least for humanists, TMT does generalize beyond specific cultural worldviews to overall worldviews. It also indicates that the individual difference variables of being humanist/non-humanist and normative/non-normative do not affect the ability of mortality salience to prime death-thoughts. Rather, being humanist or non-humanist affects worldview defense after the death-thoughts have been primed and before distal defenses (i.e., worldview defense) are activated.

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Sharon R. Shatil, B.A., M.S.

Thank you to my daughter, Maya, for always brightening my day and making me see what is truly important in life.

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Introduction

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After life-threatening events, people tend to reinforce the norms of their culture (for a review see Pyszczynski, Greenberg, & Solomon, 2003). TMT explains these behaviors as attempts to buffer the potential for anxiety provoked by being aware of one's own inevitable mortality (Pyszczynski et al., 2003). In other words, terror management is literally the way that people manage the terror of thinking about their own deaths. TMT is based on the work of Ernest Becker (1973), who posited that humans manage the potentially paralyzing fear caused by knowledge of their own deaths, often called existential fear, by developing shared conceptions of reality, or worldviews, which offer literal (i.e., belief in an afterlife) and/or symbolic (i.e., contributing to something greater or more long lasting than an individual's life) immortality. Faith in these worldviews protects people from existential fear: (1) by providing meaning, the promise of immortality, and standards and values by which one can feel worthwhile, and (2) when people believe that they are meeting or surpassing those standards of value (i.e., self-esteem, which TMT theorists define as the degree to which people believe they are meeting or exceeding those standards). Accordingly, TMT researchers have found that: (1) when reminded of their mortality, people try to bolster their worldviews and attempt to live up to culturally prescribed standards of value (for a review, see Pyszczynski et al., 2003) and (2) people with naturally high levels of self-esteem and experimentally elevated levels of self-esteem show less anxiety and less defense in response to threats (e.g., Greenberg, Solomon, et al., 1992).

A large body of research has supported the assertion that mortality salience (when people are reminded of their mortality) affects a wide range of behaviors (e.g., Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989; Greenberg, Pyszczynski, Solomon, Rosenblatt, Veeder, et al., 1990, Greenberg et al., 1995, Pyszczynski et al., 1996; Jonas, Schimel, Greenberg, & Pyszczynski, 2002). TMT theorists purport that, because cultural worldviews are preserved by social consensus, the mere presence of someone with a different worldview threatens one's own worldview by eroding consensus (Schimel et al., 1999). A decrease in unanimity allows for the possibility that one's own worldview is incorrect. Thus, mortality salience should increase general in-group bias, and this has been found (e.g., Greenberg et al., 1990). Mortality salience also increases endorsement of cultural stereotypes (Schimel et al., 1999).

Despite research testing alternative explanations for mortality salience effects, some holes remain in the theory. TMT posits that mortality salience evokes death-thoughts. When death-thoughts are first brought into consciousness, proximal defenses, such as denial and suppression, are utilized to remove death-thoughts from awareness (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994; Arndt, Greenberg, Pyszczynski, & Solomon, 1997; Greenberg et al., 2000). After the death-thoughts fade from conscious awareness, but are still accessible through implicit measures, distal defenses (including worldview defense) predominate (Greenberg et al., 1994). Please see Figure 1, below, for an illustration of the proposed process through which mortality salience influences worldview defense.

Figure 1. TMT model of defense against death-thoughts (from Pyszczynski, Greenberg, & Solomon, 1999, p. 840)

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┌─────────────────────────────────────────┐
│   Death-related thoughts enter awareness │
└─────────────────────────────────────────┘
                    ⇩
┌─────────────────────────────────────────┐
│   Proximal defenses, such as suppression &│
│        rationalization are used          │
└─────────────────────────────────────────┘
                    ⇩
┌─────────────────────────────────────────┐
│   Increase in death-related thoughts outside│
│                awareness                 │
└─────────────────────────────────────────┘
                    ⇩
┌─────────────────────────────────────────┐
│   Distal terror management defenses, i.e.│
│   worldview defense and self-esteem bolstering│
│                are used                  │
└─────────────────────────────────────────┘
                    ⇩
┌─────────────────────────────────────────┐
│   Death-related thoughts outside awareness are│
│   reduced and "potential terror is averted"│
└─────────────────────────────────────────┘
```
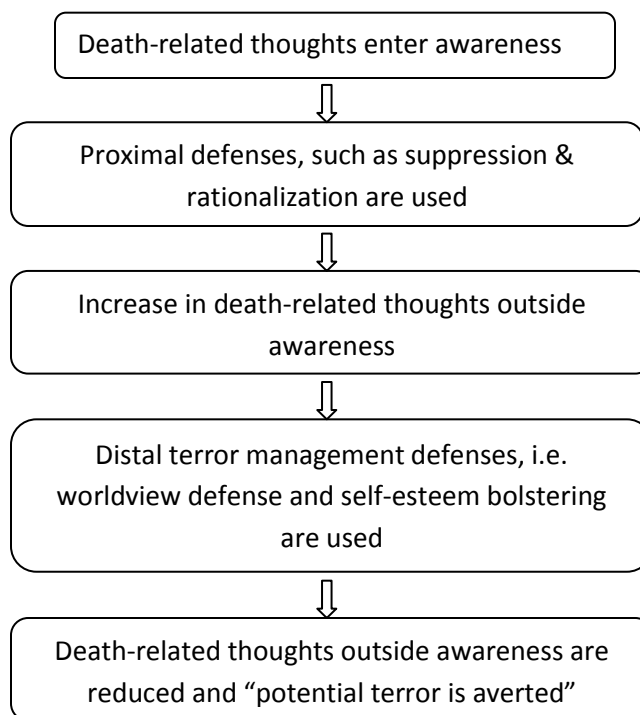
Various cognitive and personality processes can influence mortality salience at any point between the salience manipulation and worldview defense. Such factors might moderate the relationship between mortality salience and evocation of death-thoughts, or they might moderate the relationship between death-thoughts and worldview defense. More research is needed to determine whether mortality salience priming affects people who hold different beliefs differently; that is, whether holding different beliefs affects how well death-thoughts are primed.

Although a significant amount of literature exists to support TMT, several researchers have criticized TMT and proposed alternative explanations for mortality salience effects (e.g., Snyder, 1997; Navarrete et al., 2004, 2005; Navarrete, 2005). Even if the general tenets of TMT are accepted, another weakness in the TMT literature is that

researchers have generally tested worldview defense with rather limited measures (e.g., defending a particular value, evaluations of pro- or anti-American essays, or defense of one's religion (for review see Pyszczynski et al., 2003)). TMT research has defined worldviews as shared conceptions of reality, which offer literal (i.e., belief in an afterlife) and/or symbolic (i.e., contributing to something greater or more long lasting than an individual's life) immortality (Pyszczynski et al., 2003). Given this definition, a worldview could be as specific as a single value, or as large as an ideological system that guides all personal beliefs. TMT research has focused on the more specific end of the spectrum. However, it has missed measuring worldview as predictive of one's values and beliefs across areas of life (what I will call one's "overall worldview"). Therefore, it is unclear whether mortality salience affects defense of one's overall worldview or only smaller, more specific, parts of one's worldview (more in-group bias). Therefore, what is needed is a way of investigating people's overall worldviews. Tomkins (1963, 1978, 1987) has proposed a way to do this.

In order to fill some of the gaps within the TMT literature, the goals of the current study are twofold: 1) to determine whether or not the type and magnitude of overall worldview held affects how strongly people engage in worldview defense as it is typically measured, and 2) to determine whether holding a particular worldview moderates the relationship between mortality salience and worldview defense and, if so, where in the TMT model that moderation occurs (e.g., whether holding the specific worldview affects the ability of mortality salience to prime death-thoughts or only affects worldview defense itself).

To accomplish these goals, first, the literature that supports TMT is reviewed, including evidence of when and why the effects of thinking about mortality occur as well as when they do not occur. Next, established critiques of TMT are reviewed, other critiques and areas of research that are missing from the TMT literature are more fully explored. Following that, the study goals are explained in more detail and the study is proposed as a way to improve TMT. Next, the exact methods of the study, including study participants, design, and measures, are introduced. After that, the results of the study are presented. Finally, the study results will be discussed, both within the context of TMT literature and within the greater context of personality, social, and clinical psychology.

Terror Management Theory

TMT is based on the work of Ernest Becker (1973), who integrates the ideas of Sigmund Freud, Soren Kirkegaard, and Otto Rank into a theory revolving around humankind's dualistic feeling of specialness contrasted with its knowledge of simply being another animal that defecates and dies. Thus, Becker (1973, p. 162) posits that most human actions are done in an attempt to transcend this animality by balancing two main motives: the motive to join into some "larger expansiveness of meaning" so that one does not feel "impotent in the face of nature" and the motive to increase one's own powers and individuality. Becker (1973) proposes that humans can never completely satisfy both motives and, thus, will always suffer as part of the human condition; however, acting out culturally prescribed hero roles helps one to feel that he/she can "oppose nature and transcend it," thereby denying one's "creatureliness" (p. 159). Therefore, acting out and

supporting culturally prescribed roles helps people manage their feelings of impotence and believe that they are part of something larger and more meaningful than themselves.

Terror management theorists have interpreted Becker's (1973) work to mean that humans manage the potentially paralyzing fear caused by knowledge of their own deaths, or existential fear, by developing a cultural anxiety buffer made up of two related factors. The first factor is a shared conception of reality, or worldview, which gives meaning and order to experiences and offers literal and/or symbolic immortality. The second factor is self-esteem, which TMT theorists define as the degree to which people believe they are meeting or exceeding culturally prescribed standards (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997). Thus, people can mitigate potentially incapacitating existential terror through gaining meaning and the promise of immortality from their worldview and through believing that they are living up to the standards of that worldview. TMT theorists posit that TMT is important not only because of the behaviors that it is able to predict and the conditions in which those behaviors occur and do not occur, but also because TMT is observable in history and can link social and clinical psychology.

Evidence for TMT

In accordance with the above premises, TMT researchers have hypothesized and found that: (1) when reminded of their mortality, people try to bolster their worldviews and attempt to live up to culturally prescribed standards of value and (2) people with naturally high levels of self-esteem and experimentally elevated levels of self-esteem show less anxiety and less defense in response to threats (e.g., Greenberg, Solomon, et al., 1992) (for a review, see Pyszczynski et al., 2003).

Mortality salience effects. The first hypothesis, that making mortality salient should lead to people reinforcing their worldviews and attempting to live up to the values of the worldviews (termed worldview defense), is called the mortality salience hypothesis (e.g., Rosenblatt et al., 1989). TMT proponents hypothesize that faith in one's worldview and its effectiveness as an anxiety buffer are reinforced through social consensus, knowing that most people share one's worldview. However, the existence of people holding contradicting worldviews casts doubt on the validity of one's own worldview, making it a less effective anxiety buffer (Pyszczynski et al., 2003). Thus, TMT predicts that people will tend to respond positively to others who agree with and uphold their worldviews and negatively to those who disagree with or violate them, and these tendencies should be magnified by mortality salience. Similarly, it predicts that mortality salience will make it more psychologically difficult to violate the values of one's worldview, for example misusing religious symbols in order to solve a problem. Research has supported these predictions (e.g., Rosenblatt et al., 1989; Greenberg et al., 1990; Greenberg, Simon, Porteus, et al., 1995).

Rosenblatt and colleagues (1989) asked half of the participants to fill out the Mortality Attitudes Personality Survey, which consisted of two open-ended questions asking participants "to write about (a) what will happen to them as they physically die, and (b) the emotions that the thought of their own death arouses in them" (p. 682). That manipulation has become the standard mortality salience manipulation. Rosenblatt and colleagues (1989) found that judges and students in the mortality salience condition assigned higher bails to hypothetical prostitutes than those in the non-mortality salience condition. The difference was not due to mortality salience evoking negative emotions or

physiological arousal. Consistent with TMT, only students in the mortality salience

condition who had negative views of prostitutes prior to the study assigned higher bails.

After mortality salience, the students also assigned a higher reward to a woman who

helped police apprehend a dangerous criminal (Rosenblatt et al., 1989).

Florian and Mikulincer (1997) replicated Rosenblatt and colleagues' (1989)

findings with other moral transgressions, showing that the mortality salience hypothesis

is generalizable to other cultures (Israeli college students) and that mortality salience

effects generalize across individual differences in what aspect of death provokes fear.

However, they also found that mortality salience better predicts judgments against

lawbreakers with some refinement of the mortality salience hypothesis. Specifically, fear

of death can be broken down into fear of interpersonal consequences (e.g., loss of social

identity and worries about consequences to loved ones after death) and fear of

intrapersonal consequences (e.g., fear of one's body decomposing or inability to be self

fulfilled) (Florian & Kravetz, 1983). Violations of values and morals can also have

interpersonal or intrapersonal consequences. Mortality salience effects are strongest when

the type of existential fear and the type of moral transgression are aligned (Florian &

Mikulincer, 1997). For example, people who more feared the interpersonal consequences

of death made harsher judgments against people whose transgressions had interpersonal

consequences (e.g., the driver in a hit-and-run accident that left a 5-year-old daughter

without parents for a year) (Florian & Mikulincer, 1997).

In addition to judging the actions of others, TMT suggests that acting in ways

consistent with one's worldview is another way of buffering anxiety in the face of

mortality salience. Greenberg, Simon, Porteus, and colleagues (1995) asked students to

solve problems with appropriate objects or with the American flag and a crucifix. Mortality salience increased the time to complete the tasks, increased subjective feelings of tension during the tasks, and increased reluctance to use the cultural objects inappropriately to solve the problems (e.g., a devout Catholic using a cross as a hammer) (Greenberg, Simon, Porteus, et al., 1995).

TMT posits that responses to mortality salience should include two types of reactions: 1) reinforcing one's own worldview or individual values that are part of one's worldview through personally living up to those values and judging others' compliance, and 2) bolstering one's worldview through praising people who praise their worldview and reacting negatively (by criticizing, rejecting, or aggressing against) to those who criticize or disagree with their worldview. Many studies have used responses to essays or statements that are pro- and anti- country, place of residence, or political views as measures of worldview defense (e.g., Greenberg et al., 1990; Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994; McGregor et al., 1998). In one study, students from the USA read pro- American, anti-American, and mixed-view essays (Greenberg et al., 1990). Each participant read all of the essays, and all of the participants agreed with the pro-American author more than the anti-American author. However, mortality salience resulted in significant differences in endorsement of the three essays, with (a) greater agreement with the pro-American essay than the mixed-view essay and (b) greater agreement with the mixed-view essay than the anti-American essay. Mortality salience resulted in a corresponding distribution of "liking" of the authors of the three essays. Those differences were not found in the non-mortality salience group (Greenberg et al., 1990; 1994).

TMT views worldviews as fragile and only sustained by social consensus; therefore mortality salience should raise the degree to which participants believe others agree with their worldview. Pyszczynski et al. (1996) showed that this effect occurs when mortality is made salient in a natural environment. They interviewed German citizens either directly in front of or 100 meters from a funeral parlor, asked them about their attitudes towards German immigration policies, and asked them what percentage of the German public they thought agreed with them. Participants who were interviewed in front of the funeral parlor believed that a higher percentage of people agreed with them when compared to people who were interviewed 100 meters away from the funeral parlor (non-mortality salience condition). This study was replicated with similar results in Colorado Springs, although the participants were asked about their attitudes toward teaching Christian values in school rather than about immigration policies (Pyszczynski et al., 1996).

How far would someone go to defend his/her worldview after mortality salience? TMT suggests that people will use any available means to bolster their worldview, thereby mitigating potentially paralyzing existential terror. Although it would be unethical to induce mortality salience and give subjects an opportunity to be violent towards others, McGregor and colleagues (1998) were able to measure physical aggression in a creative way. They had students fill out "personality" questionnaires that included either mortality salience induction or a control condition of thinking about their next big exam. Then they told students to write about their political views and then, after a delay, presented them with a paragraph that either matched or ridiculed their views. Participants were told that the paragraph was written by another participant, and, as part

of a supposed second experiment studying taste preferences, that they would give the person whose paragraph they read hot sauce to taste. The participants were shown a food preferences form that indicated that the target disliked spicy food. As was expected, people in the mortality salience condition gave the target who disagreed with their views more hot sauce than did participants in any of the other three conditions (McGregor et al., 1998). In two separate follow-up studies, it was found that, when given the opportunity to judge and to evaluate the worldview-threatening author, participants in the mortality salience condition did not later aggress with more hot sauce. When given the opportunity to aggress with more hot sauce, participants in the mortality salience condition did not later evaluate the worldview-threatening author more negatively than did participants in the other conditions (McGregor et al., 1998). Although it is questionable whether allocating hot sauce and physical aggression can be equated, the results of these studies may indicate that denigrating and aggressing against people who threaten one's worldview are two ways of defending that worldview. It may be that people use whatever means are most accessible to bolster their worldview after being reminded of their mortality.

As proposed by TMT, the simple existence of people with other worldviews is threatening after mortality salience because their existence opens up the possibility that one's own worldview may not be correct (and thus may not ensure immortality). For that reason, one will have more negative reactions to people who presumably do not share one's worldview (out-group) and more positive reactions to people who seem to share one's worldview (in-group). For example, Oschmann and Mathy (1994 as cited in Pyszczynski et al., 2003) found that German students in the mortality salience condition,

but not in the non-mortality salience condition, rated other German students more positively than they rated Turkish students. Mortality salience induction not only seemed to affect students' opinions, but also seemed to affect their behavior. A follow-up study showed that German students in the mortality salience condition sat farther away from a Turkish target than a German target in a waiting room. Students in the non-mortality salience condition did not sit significantly farther away from either the Turkish or the German target (Oschmann & Mathy, 1994 as cited in Pyszczynski et al., 2003). Similarly, Greenberg and colleagues (1990) found that, among Christian students, mortality salience led to more positive perceptions of another Christian person and to more negative perceptions of a Jewish person.

Although people are more likely to have negative reactions to people in their out-groups (Greenberg et al., 1990; Oschmann & Mathy, 1994 as cited in Pyszczynski et al., 2003) and to endorse stereotypes after mortality salience (Schimel et al., 1999), there is at least one exception to this rule. However, the exception is also explained by TMT. If stereotypes serve, at least in part, to bolster faith in one's worldview, then people should like members of out-groups who conform to stereotypes better than members of out-groups who violate stereotypes after mortality salience. This should hold true no matter how undesirable the stereotype is, because someone who violates a stereotype challenges the validity of one's worldview. Indeed, Schimel and colleagues (1999) found that participants in the non-mortality salience groups preferred the non-stereotyped minority better than the stereotyped minority; however, following mortality salience, participants preferred minorities who conformed to stereotypes better than those who violated stereotypes (even if by violating the stereotype they fit better with the values of the

majority culture). No follow-up study was done assessing whether mortality salience produces mirror effects among members of the minority group. The dynamics of mortality salience might differ depending on the majority status of one's ingroup, such that minority members may show a different propensity for stereotyping or liking members of the majority.

The mortality salience effect of negatively evaluating those who do not share one's worldview may carry over into judgments of culpability. Nelson et al. (1997) asked participants to view either a gruesome or a standard driver education video, then had them read about a driver who was suing a car company after he was in a car accident, then had them assign blame and how much money (if any) the driver should be awarded. Participants in the mortality salience condition blamed the Japanese automaker more than the American automaker, but company nationality did not affect blame assignment for participants in the control condition. This is important because it could have implications for the legal system. For example, if lawyers use graphic pictures/videos and/or are able to make jurors think about their own deaths, TMT would predict that those jurors would be more likely to convict a member of their out-group.

Although there is a tendency to focus on the negative effects of mortality salience, positive effects do exist. Similar to the inclination to reward those who uphold cultural values (Rosenblatt et al., 1989) and to having difficulty violating one's values (Greenberg, Simon, Porteus, et al., 1995) after mortality salience, people should attempt to exemplify the attitudes and behaviors prescribed by their cultural worldview. Jonas and colleagues (2002) found that citizens of the U.S.A. in the mortality salience group gave twice as much to a U.S. charity than did those in the non-mortality salience group.

However, in-group bias still occurred to a degree in that, in the mortality salience group, more money was given to the domestic charity than to the foreign charity. There was no difference between mortality salience and non-mortality salience groups in the amount given to a foreign charity (Jonas et al., 2002).

Why and when mortality salience effects occur. According to TMT, mortality salience increases the accessibility of death-thoughts that are outside of conscious awareness, and these death-thoughts lead to worldview defense (Greenberg et al., 1994; Arndt et al., 1997a, Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000). Immediately after people concentrate on death-thoughts (i.e., the death-thoughts are in conscious awareness), people use proximal defenses, such as denial or suppression, to remove death-thoughts from awareness. After the death-thoughts have been removed from awareness, but are still detectable through implicit measures, people use distal defenses, such as worldview defense to buffer existential anxiety (Greenberg et al., 1994). This process of using proximal and then distal defenses to deal with conscious and non-conscious death-thoughts is called the "dual process model of defense against conscious and unconscious death-related thoughts" (Landau, Solomon, Pyszczynski, & Greenberg, 2007, p. 482). Greenberg and colleagues (2000) found that, when there was no delay after mortality salience induction, direct defense (by biasing one's report of emotionality to deny one's vulnerability to an early death) was higher and worldview defense was lower; however, when there was a delay, direct defense was lower and worldview defense was higher. Greenberg and colleagues (1994) either had people complete the standard mortality salience manipulation or the standard manipulation plus writing about their deepest emotions about their death and found that the prolonged,

extensive consideration of mortality actually attenuated mortality salience. This seems to occur because the death-related thoughts were kept in awareness, and worldview defense occurs only if death-related thoughts are accessible, but outside of conscious awareness (Greenberg et al., 1994). Immediately after mortality salience induction, accessibility of death-related thoughts is low (as measured by a word completion task with a number of stems able to be completed with death-related words), but it increases after a distraction.

Few studies have used a manipulation check to determine that death-thoughts are actually evoked after mortality salience induction. However, in two separate studies, Greenberg and colleagues (1994) found that, after the standard mortality salience inducation, worldview defense occurs and death-related thoughts are evoked. Given Greenberg and colleagues' (1994) research, TMT theorists propose that death-thoughts are a necessary link between mortality salience manipulations and worldview defense. Similarly, if death-related thoughts are the instigators of potential anxiety and, thus, worldview defense, then it would be predicted that being able to defend one's worldview after mortality salience induction would decrease the accessibility of death related thoughts. Greenberg and colleagues (2000) found exactly that. Death-thoughts (as measured through a word completion task) may not only be consciously induced through asking people questions about their own deaths (Greenberg et al., 1994; Greenberg et al., 2000), but may also be induced through subliminal priming (Arndt, Greenberg, Pyszczynski, et al., 1997). Priming using the words "dead" and "pain" resulted in higher accessibility of death-related thoughts and amplified worldview defense when compared with priming using the words "field" and "pain" (Arndt, Greenberg, Pyszczynski, et al., 1997). In a follow-up study, it was found that when participants are aware of the word

"death" being flashed, mortality salience effects do not immediately occur. TMT theorists posit that this occurs because the death related thoughts need to be outside of one's central awareness. This is because immediately after people concentrate on thoughts of death (i.e., the death-thoughts are in conscious awareness), they use proximal defenses, such as denial of vulnerability or suppression, to remove death-thoughts from awareness.

In order to test whether the removal of death-thoughts from conscious awareness is necessary for later worldview defense, Arndt and colleagues (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997) had participants think about their mortality using the standard mortality salience manipulation and tested their accessibility to death related thoughts under cognitive loads at different time points. Experimenters presented a sequence of 11 numbers for 30 seconds and asked the participants to remember the numbers until they were asked to write them down. Participants then filled out a packet that contained (in order) "filler items," mortality salience or control items, a questionnaire about affect, a word completion task measuring death-thought accessibility, a "distraction" reading passage, and a second word completion task measuring death-thought accessibility (Arndt et al., 1997, p. 8). Participants were asked to write down the numbers either immediately after the filler questionnaire that followed seeing the numbers, immediately after the mortality salience manipulation (low cognitive load), after the first death-thought accessibility measure (high cognitive load at "Access 1"), or after the second death-thought accessibility measure (high cognitive load measured at "Access 2") (Arndt et al., 1997, p. 8). The authors hypothesized that high cognitive load disrupts participants' ability to suppress death-thoughts; the hypothesis was supported by

the finding of an immediate increase in death related thoughts and worldview defense in the high cognitive load conditions.

Besides predicting the behaviors of people who have been thinking about their own deaths, TMT has also been able to predict the influence of other cognitive processes on mortality salience effects. For example, TMT assumes that existential fear is an unconscious fear coming from a desire to survive. It is thus predicted that mortality salience effects will be most robust when people are in an experiential mode of thinking, marked by greater emotion and less conscious awareness in processing experiences (Simon et al., 1997). Given this, it is predicted that mortality salience effects will not occur when people are in a rational mode of thinking. Simon and colleagues (1997) manipulated participants' mode of thinking (through the dress of research assistants and wording of questionnaires, which were matched to evoke either experiential or rational thinking). Engagement of experiential thinking was confirmed by participant ratings of confederate's formality. Participants' written responses to questions about viewing television or mortality also evidenced the activation of experiential versus rational thinking in participants. Simon and colleagues (1997) found that mortality salience was less likely to lead to worldview defense when participants were in the rational mode of thinking. As would be expected, participants in the experiential mode also had more accessibility to death related thoughts than did participants in the rational mode of thinking.

In addition to cognitive processes influencing mortality salience effects, many individual differences seem to affect mortality salience effects. Data support the assertion that people who have a high self-esteem, or who have their self-esteem strengthened, are

less vulnerable to anxiety and consequently exhibit less need to buffer against anxiety through worldview defense (for a review see, Pyszczynski et al., 2003). For example, Greenberg and colleagues (1992) found that both people with high dispositional self-esteem and people who had their self-esteem artificially bolstered through positive personality feedback, experienced less anxiety in response to seeing videos about death or expecting to receive a painful shock than people with low dispositional self-esteem or those who did not have their self-esteem raised. The second part of the assertion is that, given self-esteem's ability to buffer anxiety, a higher self-esteem should lessen the need for worldview defense. Harmon-Jones and colleagues (1997) found that raising self-esteem decreases mortality salience effects (they had less negative views of an anti-U.S.A. essay than did people who received neutral personality feedback). Also, people with naturally high self-esteem exhibited less worldview defense than did people with naturally moderate or low self-esteem (Harmon-Jones et al., 1997).

TMT also posits that people defend against existential fear by behaving in ways that could enhance their self-esteem. Indeed, Taubman Ben-Ari, Florian, and Mikulincer (1999) found that following mortality salience, Israeli soldiers who used their driving ability as a source of self-esteem took greater driving risks in a simulator than did soldiers who did not use driving ability as a source of self-esteem. Additionally, soldiers who were given positive feedback about their driving did not drive as recklessly as soldiers who were given no feedback (Taubman Ben-Ari et al., 1999). Taken together, these studies suggest that self-esteem buffers existential anxiety and the need for worldview defense and that people strive to increase self-esteem in order to cope with this anxiety.

According to TMT, a main purpose of a worldview is to provide literal and symbolic immortality. Thus, a belief in immortality should decrease the need for self-esteem enhancement and worldview defense. In fact, Dechesne et al. (2002 as cited in Pyszczynski et al., 2003) found that, mortality salience leads people to overrate the accuracy of positive personality feedback but this tendency is reduced if the participant first reads an article with "scientific evidence" of life after death. Symbolic immortality (believing that one is contributing to something greater or more long lasting than an individual's life) is negatively correlated with fear of death (Florian & Mikulincer, 1998) and moderates the effects of mortality salience such that the effects are significant in people with low scores on symbolic immortality but not in people with high scores on symbolic immortality (Florian & Mikulincer, 1998). Florian and Mikulincer (1998) failed to provide a manipulation check, so it is unclear whether symbolic immortality modulates the ability of mortality salience to evoke death-thoughts or the subsequent need for worldview defense after the evocation of death-thoughts. Jonas and Fischer (2006) hypothesized that religion would play a role in managing terror, due to the centrality of literal and symbolic death transcendence in most religions. They did find that people who were intrinsically religious (their religion permeates all aspects of their lives) and who had an opportunity to reaffirm those religious beliefs demonstrated less death-thought accessibility and less worldview defense (defense of Munich as a place to live). However, belief in literal and/or symbolic immortality and religion seems to be part of one's worldview, and no studies have tested whether an attack on those aspects of one's worldview leads to increased mortality salience effects. It also seems that no one has

addressed whether, within the intrinsically religious, it is the belief in immortality or the prolonged consideration of mortality (or both) that attenuates mortality salience effects.

Attachment style is another factor that mediates the effects of mortality salience. There have been multiple ways of conceptualizing adult attachment styles (e.g., Bartholomer, 1990; Hazan & Shaver, 1987). Most research that has investigated the relationship between TMT and adult attachment styles has categorized adult attachment into three styles based on how people typically feel in close relationships. In close relationships, securely attached individuals feel trust, companionship, and positive feelings. Avoidant individuals generally feel distrust and fear intimacy. Finally, an anxious-ambivalent individual typically fears abandonment and ruminates on attempting to become one with his/her partner while feeling anxious and unsure about that partner's true feelings (Hazan & Shaver, 1987). Bowlby (1969) posited that attachment is the main way that children obtain security from parents (or the main caregivers). Similarly, Becker (1971) proposed that self-esteem begins developing by living up to parental standards, and, later, continues through living up to values of the culture and of significant others. Thus, one would expect that people who are securely attached would seek out affiliation and close relationships but would not need to defend their cultural worldviews. This is exactly what Florian, Mikulincer, & Hirschberger (2002) and Taubman–Ben-Ari, Findler, & Mikulincer (2002) found.

Hypothesizing that symbolic immortality is related to mortality salience effects (through fear of death), Florian and Mikulincer (1998) investigated whether attachment style was related to self-reported symbolic immortality and fear of death. Indeed, they found that symbolic immortality was related to less fear of death only in securely

attached individuals. In contrast, higher symbolic immortality was related to higher fear of death in avoidant individuals (Florian & Mikulincer, 1998). This suggests that individual difference variables such as attachment style and belief in symbolic immortality are interconnected and may be most helpful in understanding how people manage existential fear when examined in combination rather than individually.

This research suggests that symbolic immortality is related to mortality salience effects and that, in securely attached individuals, conscious fear of death is attenuated by a belief in symbolic immortality (Florian & Mikulincer, 1998). However, Florian and Mikulincer's (1998) findings were based on self-reported, conscious, fear of death. Worldview defense occurs when death-thoughts are outside of conscious awareness. Therefore, this study left unclear whether attachment style, or a combination of attachment style and symbolic immortality, may moderate mortality salience effects.

To begin to address this question, Mikulincer and Florian (2000) investigated whether attachment style was related to mortality salience effects. They found that securely attached individuals did not engage in worldview defense and evinced greater desire for closeness following mortality salience relative to non-securely attached individuals (although it is possible that seeking closeness is the worldview defense of securely attached individuals). The authors did a check to ensure that individuals in all attachment categories had increases in death-thought accessibility and found that all of the individuals showed an increase in death-thought accessibility after a delay (Mikulincer & Florian, 2000). However, anxious-ambivalent individuals also showed heightened access to death-thoughts before the delay task. Mikulincer and Florian (2000) believe that this occurred because anxious-ambivalent individuals cannot suppress death-

thoughts, due to the propensity to ruminate on anxiety provoking subjects. In fact, worldview defense did not decrease death-thought accessibility in anxious-ambivalent individuals, whereas it did reduce accessibility to death-thoughts in avoidant individuals (Mikulincer & Florian, 2000).

Another individual difference that moderates mortality salience effects is authoritarianism. Greenberg and colleagues (1990) investigated the possible relationship between authoritarianism and worldview defense following mortality salience. According to Adorno et al., 1950 (as cited in Greenberg et al., 1990), the authoritarian personality develops as a defense to fears and is marked by an increased respect for authority, a disdain for the disadvantaged, and a conventional and inflexible cognitive style. Greenberg and colleagues (1990) used this framework to extend TMT and suggested that high authoritarianism develops to defend against the fear of death and plays a significant part in worldview defense; therefore, high authoritarians should respond especially negatively to dissimilar others after mortality has been made salient. Greenberg and colleagues (1990) found that mortality salience led to the negative evaluation of dissimilar others in high authoritarians but not in low authoritarians; high and low authoritarians did not differ in their negative evaluations in the absence of mortality salience. This indicates that, for high authoritarians, disparaging dissimilar others helps defend against existential anxiety, whereas low authoritarians are able to protect themselves from existential anxiety without disparaging dissimilar others. However, it may be that tolerance of dissimilar others is part of the worldviews of individuals who are low in authoritarianism; therefore, espousing tolerance may be one way of defending their worldview (Greenberg et al., 1990).

One more individual difference that moderates mortality salience effects is political liberalism. Greenberg et al. (1992) found that political liberals did not devalue dissimilar others after mortality salience but political conservatives did. In fact, political liberals evaluated dissimilar others more favorably after mortality salience than they did in the control condition. Again, this is likely because tolerance and open-mindedness are part of liberals' worldview; therefore, by acting consistently with the liberal worldview, they are defending that worldview. Greenberg and colleagues (1990) believed that out-group exclusion could work differently in the United States because freedom and democracy are important cultural values in the USA, and the authors assumed that freedom and democracy include the value of tolerance. Greenberg and colleagues primed tolerance in half of the American participants (both liberal and conservative) and, concordant with their previous results, found that individuals who were primed with thinking about the value of tolerance did not disparage dissimilar others after mortality salience. This indicates that values of one's worldview that are salient at the time of considering one's death regulate people's responses to mortality salience.

Historical examples. Many events throughout history are consistent with the hypotheses of TMT. Perhaps most salient in our minds are the events of 9/11/01, when al-Qaeda terrorists hijacked 4 planes, which they crashed into the World Trade Center in Manhattan, the Pentagon, and a field in Pennsylvania, bringing down the World Trade Center and killing nearly 3,000 people. The events of 9/11 were potent reminders of our mortality. Pyszczynski and colleagues (2003) cited varying research to show that Americans used both proximal and distal defenses to cope with this existential fear after 9/11. As would be expected, during and immediately after 9/11, people used the proximal

defense of trying to get rid of thoughts of their own deaths either by suppressing thoughts

of death (by distracting themselves and doing things to reduce vulnerability) or by

denying their vulnerability. For example, Valhov and colleagues (2002) found that nearly

25% of those surveyed in Manhattan a month after 9/11 reported increased use of

alcohol. Later, people used the distal defense of seeking confirmation of and bolstering

their own beliefs, as seen in increased religious service attendance and amplified

patriotism and nationalism (Lampman, 2001 as cited in Pyszczynski et al., 2003). They

also used distal defenses such as raging against those who challenged those beliefs, as

seen in the hostile reactions to people who said the U.S.A. brought the attacks on

themselves and in increased bigotry especially against Muslims and people of Middle

Eastern decent. (Pyszczynski et al., 2003)

The Israeli people's reactions to terrorist attacks are also consistent with TMT.

Berrebi and Klor (2008) looked at the 5 national elections from 1988 to 2003 in Israel.

When terrorist attacks occur within three months of an election, there is an overall

increase in support for the Likud and other right-leaning parties by .045 percentage points

per terror fatality (Berrebi & Klor, 2008). With an average of three deaths per terror

attack, they conclude that there is a significant increase in support for the right block of

political parties after each terror attack. The right leaning parties emphasize tradition and

take a hard-line on security of the nation, so TMT would predict this effect. TMT also

predicts what happens when the original political leanings of a territory are taken into

consideration. In general, terrorist attacks within three months of elections are related to a

polarization of the Israeli electorate, such that terrorist attacks increase support for the

right block of political parties in areas that already lean right but decrease support for the

right block in areas that generally lean left (Berrebi & Klor, 2008). However, the increase in support for the right block is stronger when the location of the attacks is closer to one's home, and when terror attacks with a large number of fatalities occur in left-leaning localities, there is still an increase in support for the right political block (Berrebi & Klor, 2008). This suggests either that a desire for security may out-weigh bolstering one's worldview or that there is a more subtle way of measuring worldview that would have better captured defense of the worldviews of left-leaning citizens.

Critiques: Alternative Explanations

Despite the impressive literature supporting TMT, the worldview defense effects accounted for by TMT may be better explained by other theoretical frameworks. Proponents of Control Theory, Evolutionary Psychology, and Coalitional Psychology have all offered alternative theories to explain mortality salience effects.

Control theory. For example, Snyder (1997) proposes that mortality salience effects are based on a need for control. Snyder defines control as "a cognitive model whereby people strive to comprehend the contingencies in their lives so as to attain desired outcomes and avoid undesirable ones" (1997, p. 48). He argues that the definition of cultural worldview that TMT researchers use can be fully explained in terms of control. A cultural worldview provides meaning, a way of understanding the world and one's position in the world. Snyder explains that this information is what people use to understand their environment and the "contingencies therein" (p. 48). Similarly, the standards and values of a cultural worldview reflect the rules that let people predict and control their own and others' behavior. Snyder proposes that self-esteem comes from having a perceived sense of control of the self.

If cultural worldview is really a structure for control, then worldview defense occurs when people feel a lack of control. The need for control leads individuals to defend worldview inasmuch as such defense reinstates a sense of control, to the extent that worldview allows a sense that one can avoid negative outcomes and acquire positive outcomes. Although TMT and control theory explain many of the same phenomena, Snyder (1997) argues that control theory both explains more phenomena more accurately and is more parsimonious than TMT. For example, Snyder (1997) contends that although increases in self-esteem do seem to decrease mortality salience effects, "these manipulations of self-esteem are based on an enhancement of perceived control" (p. 49). Snyder provides another example, arguing that TMT would suggest that people are driven to survive no matter what. However, when people are suffering and attempts to assuage the pain are unsuccessful (e.g., terminal cancer, or chronic Major Depressive Disorder), many seek to end their lives (Snyder, 1994). In this case, control of pain and suffering overcomes the drive to survive.

Evolutionary psychology. Buss (1997) similarly finds fault with the drive for survival present in TMT. He additionally argues that TMT is consistent with an outdated evolutionary psychology that does not explain a myriad of phenomena as well as modern evolutionary psychology does. For example, he cites evidence that reproduction, not survival, propels evolution and human motivation and that survival is only important in its role in promoting reproduction. TMT stresses the importance of worldview defense having evolved in order for people to adapt and to function. However, TMT focuses on psychological protection and ignores if and how worldview defense would aid in solving the problems of actual survival and reproduction. For that matter, TMT does not explain

why existential anxiety would have evolved or how an anxiety buffer would have evolved. If anxiety evolved to help survival/reproduction in response to threats, then natural selection should deselect systems that block anxiety. Beyond problems of TMT not fitting into modern evolutionary psychology, despite its claim to do so, Buss (1997) states that evidence exists suggesting that phenomena that TMT does explain, such as managing self-presentation and in-group identification and bias, do not solely exist to reduce existential anxiety. Rather, these phenomena seem to exist for goals of actual survival and reproduction.

Navarrete and Fessler (2005) echo Buss' (1997) criticism of TMT and additionally state that a survival instinct per se could not have evolved because natural selection only influences mechanisms to solve specific adaptive problems. So humans evolved to avoid numerous separate types of dangers (such as cliffs and lions), not to avoid death in general. Anxiety is part of humans' affective system that helps prompt appropriate action when confronted with adaptive challenges; thus, anxiety does not inhibit one's ability to function, but rather enhances it. If an overabundance of anxiety existed for people in a certain circumstance, in this case fear about dying, then evolution should have selected for a reduction in the anxiety instead of forming a separate system to buffer the extreme anxiety.

Coalitional psychology. Conforming to cultural standards and norms engenders increased social cohesion and cooperation (Navarrete, Kursban, Fessler, & Kirkpatrick, 2004). Therefore, worldview defense makes sense in the context of evolving to solve adaptive challenges rather than evolving to buffer possibly incapacitating existential anxiety. Mortality salience prompts worldview defense because successfully gaining

social support in the face of mortal threats (e.g., illness, starvation, severe injury) would have increased the likelihood of survival. Similarly, negative responses towards out-group members are likely when competition for resources, which are necessary for the continuation of the in-group, is pertinent (Navarrete & Fessler, 2005). Therefore, salience of existential anxiety does not uniquely cause worldview defense, but it is actually one of many adaptive challenges that require actual defense against a threat and, thus, require coalitional thinking and action.

If fitness adaptation is the overarching construct that matters in obtaining in-group bias effects, then all adaptive challenges should produce the same results as mortality salience (Navarrete et al., 2004). To test this, Navarrete and colleagues placed college students with strong American identities into either mortality salience, theft salience, social-isolation salience, or a control condition. Pro-American bias emerged in the mortality salience and theft-salience conditions. Additionally, there was an interaction between authoritarianism and condition, such that pro-American bias was higher in each experimental condition versus the control when authoritarianism was high, but there were no differences between conditions when authoritarianism was low. In their next study, Navarrete and colleagues (2004) found that the in-group bias found in their first study was not due to increased death-thoughts in the theft or social-isolation conditions. They repeated their first study in Costa Rica and found that pro-Costa Rican bias was significantly higher than the control group in the theft and social-isolation salience groups but not in the mortality salience group. Collectivism moderated the relationship between challenge and pro-American bias. Pro-American bias emerged only under high collectivism but was evoked similarly by mortality salience, social isolation, or home

construction (Navarrete, 2005). These results may indicate that coalitional theory better explains mortality salience effects across cultures; however, further research is necessary before this conclusion is drawn, as research supporting TMT has come from at least 13 countries with varying levels of collectivism (Pyszczynski et al., 2003).

Some observations that have been used to support TMT may be better explained by coalitional psychology. For example, Harmon-Jones, Greenberg, Solomon, and Simon (1996) had participants view slides of paintings by two different artists and rate the art. They then made mortality salient and had the participants rate themselves, members of the group that had the same artistic preference as themselves, and members of the group that had the different artistic preference. In the mortality salience condition, people reported those in their in-group more positively than those in their out-group. Harmon-Jones and colleagues (1996) claim that these results support TMT because even arbitrary groups can be used to feel comparatively superior, i.e. boost self-esteem, when faced with thoughts about dying. However, TMT's definition of self-esteem is how well one believes he/she is living up to culturally prescribed values, not a comparison of one's group to another group. The results seem to fit better with Navarrete and colleagues' (2004, 2005) coalitional theory. When faced with death, people rate seemingly arbitrary in-group members as higher because forming a coalition with them may help them cope with adaptive challenges that could lead to death.

Another example of research supposedly supporting TMT that may be better explained by coalitional theory is Landau, Pyszczynski, Greenberg, and Solomon's (2002 as cited in Pyszczynski et al., 2003) study. They found that reminders of death one month after 9/11 led American college students, even those who normally do not feel they buy

into the American worldview, to respond more negatively to someone who suggested that the terrorists might have had a legitimate reason for doing what they did. Landau and colleagues (2002 as cited in Pyszczynski et al., 2003) purport that this supports TMT. However, if people who generally feel at odds with the American worldview are reacting against their normal worldview in this situation, then that would support a coalitional view of in-group bias. This confound highlights the need to find a way to measure worldview defense separately from trying to bolster belonging to one's in-group.

Navarrete and Fessler (2005) claim that coalitional psychology not only is consistent with modern evolutionary theory, but also accounts for research results that are inconsistent with TMT. For example, Taubman, Ben-Ari and colleagues (2003) found that mortality salience increased willingness to initiate social interactions, lowered sensitivity to rejection, and increased perceived interpersonal competence, but only in securely attached individuals. It may be that people who are securely attached know that they can count on others when facing adaptive challenges and so seek out that support, whereas those who are not securely attached do not believe people will be there for them when they need them, and so they may not even try to seek out support. This fits with Mikulincer and Florian's (2000) findings (previously discussed in more detail) that securely attached individuals did not engage in worldview defense and evinced greater desire for closeness following mortality salience relative to non-securely attached individuals.

TMT theorists Landau, Solomon, Pyszczynski, and Greenberg (2007) do not accept criticisms that claim TMT does not fit with evolutionary theory, nor do they believe that coalitional psychology explains the variety of findings that support TMT.

They agree with Navarrete and Fessler (2005) that using the wording of "self-preservation instinct" may not be useful. However, Landau and colleagues (2007) believe that it is useful to consider all living organisms as "oriented towards self-preservation and reproduction," given that it is the higher survival rates and reproductive success of organisms with specific characteristics that determine whether those characteristics spread throughout a population (p. 488). Landau and colleagues also grant that humans likely do not have one instinctual mechanism formed to avoid death; however, we do have the knowledge that we are alive, that we want to keep living, that many things may kill us, and that we will eventually die, and such knowledge affects our very adaptive and flexible approach/avoidance predispositions. Similarly, Landau and colleagues agree with Navarrete and Fessler that fear/anxiety evolved to help organisms adapt to their environments; however, that does not mean that fear/anxiety is adaptive in all circumstances. Landau and colleagues (2007) believe that existential anxiety is not adaptive but was not selected against by natural selection because it is a byproduct of cognitive capacities (such as episodic memory, language, and self-consciousness) and specific fears of whatever threatens humans' lives, and these cognitive capacities and fears are generally highly adaptive.

According to Becker (1973), people control their existential anxiety with faith in worldviews, which helps people understand events related to survival by explaining them within a system of meaning and order and by giving people hope of transcending death (Landau et al., 2007). A belief in death transcendence is characteristic of nearly all cultures and is not explained well by coalitional psychology. Landau and colleagues (2007) question why the supernatural would be found in almost all cultures if worldviews

are solely meant to show belonging to a group. Landau and colleagues (2007) additionally argue that 1) coalitional psychology does not explain why worldview defense often involves defending "systems of abstract meaning" that are not related to specific life-threatening situations; 2) coalitional psychology ignores the dual process model of how mortality salience effects are generated and does not provide an alternative cognitive model that would account for findings supporting the dual process model; 3) the experiments supporting coalitional psychology "do not provide compelling or unique support for CP;" and, 4) coalitional psychology cannot account for many of the findings that support TMT hypotheses (p. 496). Navarrete and Fessler capitalized on the fact that the majority of TMT research does not distinguish between in-group identification/out-group exclusion and worldview defense. Landau and colleagues (2007) argue that this has been addressed, and that coalitional psychology cannot explain the results. For example, coalitional psychology cannot explain why mortality salience leads to increased group identification when that identification is associated with increasing self-esteem, but leads to decreased group identification when such identification is associated with decreasing self-esteem (Arndt, Greenberg, Schimel, Pyszczynski, & Solomon, 2002; Dechesne, Janssen, & van Knippenberg, 2000).

Methodological problems. Even if we decide to accept TMT's explanation of when and why mortality salience effects occur despite the criticism, it is important to recognize the methodological problems present in some of its supporting research. For example, where and how do individual differences in self-esteem, liberalism, intrinsic religiosity, authoritarianism, and attachment style (secure, avoidant, or anxious-ambivalent) fit in the TMT model? Landau and colleagues (2007) state that these

individual difference variables moderate mortality salience effects. It seems that, with the exception of self-esteem, existing TMT literature ignores the question of how individual difference variables moderate the relationship between mortality salience and worldview defense. Trait self-esteem seems to moderate the relationship between conscious death-thought activation and proximal defenses such as denial of one's vulnerability to death (Greenberg et al., 1993). Other individual difference variables could moderate the relationship between mortality salience and conscious or non-conscious death-thought activation, the relationship between non-conscious death-thoughts and the activation of worldview components, or the relationship between activated worldview components and use of the defenses that increase self-esteem and meaning (See Figure 1 on p. 3 for illustration of the trajectory of terror managment). The individual difference variables may enter the model at different points. For example, although trait self-esteem seems to moderate the relationship between conscious death-thought activation and proximal defenses, authoritarianism may moderate the relationship between activation of worldview components and distal defenses. It would be easy to imagine intrinsic religiosity acting similarly to self-esteem, with a strong enough faith buffering the need even for proximal defenses against death-thoughts; however, it is also possible that intrinsic religiosity alone bolsters one's worldview enough that once worldview components are activated, distal defenses (e.g., worldview defense) are unnecessary. Future research should investigate these hypotheses to clarify how individual difference variables fit into the terror management model.

Part of the problem of how individual differences affect mortality salience may be explained by priming. However, there is a dearth of research that could indicate whether

mortality salience priming affects people who hold different beliefs differently; that is, whether holding different beliefs affects how well death-thoughts are primed. People with liberal political orientations and those who have had the value of tolerance primed as part of their worldview show fewer mortality salience effects than do conservatives (Greenberg et al., 1992). However, it is difficult to know whether this is due to liberalism's being the salient worldview that needs to be defended or because thinking about the importance of liberalism buffers the death-thoughts that instigate worldview defense. This question could be answered at least partially by testing whether mortality salience elicits death-thoughts as effectively for liberals as for conservatives.

Although self-esteem and attachment style are convincing individual difference variables, liberalism/conservatism, intrinsic religiosity, and authoritarianism could be seen as either individual difference variables that moderate the process between mortality salience and worldview defense, or as worldviews in themselves. As has been suggested by Navarrete and Fessler (2005), if liberalism is a worldview, then defense of that worldview may take the form of tolerating those who hold differing opinions from our own. However, if it is an individual difference moderator variable, it would need to enter the model before distal defenses are engaged.

Missing piece- measurement of overall worldview. A major problem with the existing literature on TMT is its measurement of worldview defense. Worldview defense has been measured by defense of particular values or beliefs (e.g., Rosenblatt et al., 1989; Greenberg et al., 1995; Florian & Mikulincer, 1997; McGregor et al., 1998; Schimel et al., 1999), defense of one's nationality (e.g., Greenberg et al., 1990 and Pyszczynski et al., 1996), preference for one's own nationality (e.g., Oschmann, & Mathy, 1994 as cited

in Pyszczynski et al., 2003), donation to one's own versus a foreign charity (e.g., Jonas et al., 2002), blame and dislike of those who are not part of one's ingroup (e.g., Nelson et al., 1997), and defense of one's religion (e.g., Greenberg et al., 1990). TMT research has defined worldviews as shared conceptions of reality, which offer literal and/or symbolic immortality (Pyszczynski et al., 2003). As mentioned previously, using this definition, a worldview could be as specific as a single value, or as large as an ideological system that guides all personal beliefs. TMT research has focused on the more specific end of the spectrum while missing the most general end of the spectrum. Therefore, it is unclear whether mortality salience affects defense of one's overall worldview or only smaller, more specific, parts of one's worldview. It is also unclear whether a person's overall worldview affects mortality salience effects. Given this, a way of investigating people's overall worldviews is necessary. The Tomkins' Polarity Scale (1964) is a way to measure one's overall way of looking at the world, and, thus, it can be used as a way to investigate people's overall worldviews.

Tomkins' (1987) script theory proposes a way to understand people's overall worldviews, using somewhat different language than TMT theorists. Personal ideology is an individual's belief system about how people should live their lives and what factors affect how humans live. In other words, it is a person's overall worldview, which covers "political orientation, religiosity, value systems, morality, child-rearing philosophy," assumptions about human nature, "other value-laden components of personality" (de St. Aubin, 1996, p. 152), and ties that worldview to behavioral decisions (Lindeman & Sirelius, 2001). According to Tomkins' script theory (1987), the orthogonal dimensions of humanism and normativism can explain individual and group ideologies (Tomkins,

1987). De St. Aubin (1996, 1999) has found that one's levels of humanism and normativism are predictive of one's emotions and religious beliefs, in addition to one's political orientation.

Tomkins (1978, 1987) explains the personal ideologies of humanism and normativism through his script theory, which posits that personality is best explained as a story line made up of scenes which are organized by "sets of rules" called scripts (1987, p. 148). A scene is any experienced occurrence in a person's life that has a recognizable beginning and end, at least one affect, and an object (generally either the activator of the affect(s), or a response to the activator or to the affect) (Tomkins, 1978). Tomkins (1978) stressed the importance of biological, innate affects. An affect generates sensory feedback from the face, voice, and other areas of the body which "makes good things better or bad things worse…" and are "intensely rewarding or punishing" (p. 203). Carlson (1982) clarified this definition by explaining that there are three types of affects: 1) positive, inherently rewarding affects such as joy, excitement, and enjoyment; 2) negative, inherently punishing affects, such as fear, anger, or disgust; and, 3) neutral affects such as interest or surprise. Therefore, one's experiences of scenes are amplified by affects (Tomkins, 1987). For example, a hungry baby who successfully latches onto and gets milk from his/her mother has the reward of satisfying hunger amplified by affects of excitement and enjoyment (Tomkins, 1987). However, not all amplified scenes are integrated into scripts. Transient scenes, such as hearing a car honk at you and becoming startled, may be affect-laden, but do not influence and are not easily connected to other scenes (Tomkins, 1978). However, scripts are formed when perceived relationships among scenes create experiential patterns (Tomkins, 1978).

A script is a set of "*ordering rules* used for the interpretation, evaluation, prediction, production or control of scenes" (Tomkins, 1987, p. 153). Although scenes construct a script, over time the rules of the script influence the experience of a scene (Tomkins, 1978). Therefore, scripts give meaning to experiences. Scripts are necessarily incomplete, ever-changing, self-validating, variable in their accuracy/usefulness in dealing with scenes, and are variable in their complexity and in their connectedness with other scripts (Tomkins, 1987). For example, a "commitment script validates the importance and necessity of the struggle," but actually achieving what one is committed to may make that commitment script unnecessary or may mean that the script needs redefining (Tomkins, 1987, p. 153). There are an unlimited number of scripts in a person's life, and, although Tomkins (Tomkins, 1987) delineated numerous classes of scripts, there cannot be any hierarchical classification system for scripts. Some of the main categories of scripts include: the "affect management scripts," "limitation remediation" scripts, which "address those aspects of the human condition perceived to be imperfect" that can and must be changed, "nuclear" scripts, which address unsolvable situations that one is compelled to solve, and "ideological scripts" (Tomkins, 1987, pp. 160, 166, 168). Within these major categories of scripts, there can be numerous subcategories of scripts.

However, ideological scripts are "the most important class of scripts" because they provide experience with "value and affect" by endeavoring to give information about how one fits into the universe and his/her society, what one's central values are, how to achieve those values, "sanctions" for the achievement, transgression, and "justification" of those values, and information about how life should be lived and

celebrated (Tomkins, 1987, p. 170). All of these pieces are synthesized by emotional patterns, included as part of the scripts, which have developed from birth to order one's relationship to and experience of the world (Tomkins, 1987). Ideological scripts may be shared to some extent, such as in religions or in political parties, yet each person's scripts are unique because individuals are exposed to unique experiences. Therefore, ideological scripts are both able to bond people together as well as to divide them (Tomkins, 1987).

Personal and group ideologies can be understood along the two orthogonal dimensions of humanism and normativism (de St. Aubin, 1996; Tomkins, 1963). A humanistic orientation regards human experience "as the source of all meaning and value;" whereas, a normative orientation believes that reality, including standards and values, is universal and is not qualified by human circumstances or experiences and that meaning is found in those standards (Stone & Schaffner, p. 18, 1997; de St. Aubin, 1996; Tomkins, 1963). Out of this overarching difference comes the three main factors that differentiate humanism from normativism (Stone & Schaffner, 1997). First, humanism sees human nature as essentially good, whereas normativism sees human nature as essentially deficient and weak. Second, humanism accepts human experiences as they are perceived, whereas normativism evaluates and judges experiences based on external standards. Third, humanism encourages unfettered emotional responses to experiences, whereas normativism generally encourages inhibition of emotions (Stone & Schaffner, 1997). In other words, a humanist is more oriented towards human feelings and emotions whereas a normative values cognitions and judgments (Tomkins, 1987).

The differences between humanism and normativism can be found in attitudes about numerous areas, including: metaphysics, theology, mathematics, philosophy,

psychology, politics, art, theories of parenting, theories of education, and theories of value (Tomkins, 1963). For example, in metaphysics, humanists purport that reality is solely based on human perceptions, whereas normatives believe that reality exists outside of human experience (de St. Aubin, 1996; Tomkins, 1963). In child rearing, humanists tend to encourage uniqueness and displaying emotions, such as in attachment parenting, whereas normatives tend to try to make their children fit expected norms and do not allow their children to show emotions (de St. Aubin, 1996; Tomkins, 1963). Although Tomkins (1987) calls the theory explaining humanism and normativism polarity theory, this is really a misnomer. It is important to recognize that humanism and normativism are orthogonal dimensions. It is possible to be high both in humanism and in normativism, high in only one, low in both, or any combination thereof (Stone, 1986).

Outside of Tomkins' own research, few empirical studies exist that test the theory of polarity in personal ideology; however, in the studies that do exist, support has been found for the usefulness of polarity theory (e.g., de St. Aubin, 1996; Carlson & Brincka, 1987; Carlson & Levy, 1970). As would be expected, people whose personal ideologies are relatively high in humanism believe humans are essentially trustworthy, whereas people whose personal ideologies are relatively high in normativism see humans as essentially selfish (de St. Aubin, 1996). Humanists are more liberal and vote for more Democrats than do normatives. Humanists see God more as a force within humans than as an external rule-enforcing power, but normatives do not see God as existing within humans. Additionally, people high in humanism place higher priority on the values of imagination, interpersonal intimacy, and beauty in nature and the arts, and low priority on being clean and polite; whereas, people whose personal ideologies are relatively high in

normativism place higher priority on values of being socially recognized, polite, and being clean, and low priority on imagination (de St. Aubin, 1996). Carlson and Levy (1970) found that humanists are more interpersonally oriented while normatives are more individually oriented. Humanists are more likely than normatives to judge ambiguous emotional faces as experiencing positive affects; however, normatives who consider themselves to be interpersonally oriented see positive affect as much as humanists who consider themselves to be individually oriented). Additionally, humanists respond with more emotions to a lecture than do normatives (Carlson & Levy, 1970).

Polarity theory may have other applications as well. Having a highly humanistic or normative personal ideology may influence one's reasons for choosing to eat certain foods. For example, humanists tend to choose their foods based on what will help preserve nature and life (which they hold dear) and what is pleasurable to eat, while normatives tend to eat based on what they have been told is healthy (Lindeman & Sirelius, 2001). People who are unfamiliar with this theory can recognize polarity theory within politics. College students and community adults were asked to "cast" Democratic and Republican candidates in different plots including triads of humanistic or normative affects (Carlson & Brincka, 1987). Regardless of one's personal ideology, participants cast Democrats in more plots with humanistic affects and Republicans in more plots with normative affects (Carlson & Brincka, 1987).

The Current Study

The goals of the current study are twofold: 1) to determine whether or not the type and magnitude of overall worldview held affects how strongly people engage in worldview defense as it is typically measured, and 2) to determine whether holding a

particular worldview moderates the relationship between mortality salience and worldview defense and, if so, where in the TMT model that moderation occurs (e.g., whether holding the specific worldview affects the ability of mortality salience to prime death-thoughts or only affects worldview defense itself).

Given the wide scope of Tomkins' polarity theory, it could easily be used to make clear whether mortality salience affects the defense of people's overall worldviews/value systems. Although adding to the TMT research by investigating this overall worldview versus more specific worldviews investigated in previous research, the first prediction duplicates previous research, that mortality salience will lead to worldview defense. More specifically: 1) for humanists (participants high in humanism), mortality salience will increase the defense of the humanist worldview above and beyond what a control condition (dental pain) would, and 2) for normatives (participants high in normativism), mortality salience will increase the defense of the normative worldview above and beyond what a control condition would.

Our third hypothesis does not directly follow from previous literature but is a logical extension of the literature. Past research has suggested that securely attached individuals do not engage in worldview defense (Mikulincer & Florian, 2000), nor do those who value tolerance (Greenberg et al., 1992). However, that past research has not investigated what would happen if those views of trust and tolerance were the ones attacked after mortality salience. Trust and tolerance are not, in themselves, worldviews; however, given that people who have a humanistic worldview are more trusting of others and see the good in all human beings, it would be predicted that humanism would be related to secure attachment style and to tolerance. TMT would assert that a direct attack

on one's worldview after mortality salience would result in worldview defense. Thus, it is expected that 3) humanists will defend the humanist worldview less strongly than normatives will defend the normative worldview (in other words, there will be a stronger effect for normativism defense by normatives versus non-normatives in the mortality salience condition than for humanism defense by humanists versus non-humanists in the mortality salience condition).

Given that people who are high in normativism believe that meaning is found in standards and values that are the same for everyone, it is likely that an attack on any part of that worldview would be met with resistance, especially after mortality salience. Therefore, it is hypothesized that 4) mortality salience will lead to defense of the American worldview for normatives (normatives will rate the pro- American essay more positively than the anti- American essay in the mortality salience condition than in the non-mortality salience condition). However, following from the logic given from hypotheses 1-3, 5) mortality salience will not lead to defense of the American worldview for humanists (humanists' defense of the American WV will not be influenced by mortality salience).

Greenberg and colleagues (1992) suggested that liberals do not devalue people with anti-liberal views after mortality salience because liberals value tolerance; therefore, tolerating people with competing views is their worldview defense. However, it is also possible that mortality salience does not prime death-thoughts as effectively for liberals as for conservatives. Tolerance is a value espoused by humanists but not by normatives. Given this, it is possible to use polarity theory to determine whether holding a worldview affects the ability of mortality salience to prime death-thoughts, thus stopping worldview

defense, or whether a worldview that values tolerance is defended by increasing one's

tolerance of people with views that oppose one's own. Greenberg and colleagues' (1992)

finding that liberals actually rated essays with opposing views more positively after

mortality salience (versus control) indicates that liberals are also affected by mortality

salience. Thus it is predicted that 6) humanists and normatives will not differ on the

number of death-thoughts elicited in mortality salience condition.

It is possible that other variables could affect the relationship between mortality

salience and worldview defense. Humanists and normatives could have different levels of

American identity and that this could affect American worldview defense; therefore,

American identity was measured. Previous use of the Positive and Negative Affect Scale

(PANAS) in TMT literature has indicated that the mortality salience induction does not

negatively impact mood (e.g., Greenberg et al., 2003). However, the PANAS was used as

a way to measure possible affect evoked by the mortality salience induction and to

control for the possible impact of mood on dependent measures. As reported above,

people with naturally high levels of self-esteem and experimentally elevated levels of

self-esteem show less defense in response to threats (e.g., Greenberg, Solomon, et al.,

1992). Therefore, in order to assess for the possible impact of self-esteem, self-esteem

was also measured.

Methods

Participants and Design

Please see Figure 2. *Measurement Timeline* on page 53 for an illustration of the measurement design.

Participants consisted of 367 college students from the Psychology Department Subject Pool of a mid-sized Midwestern university. All participants were offered a choice between extra credit points or entry into a drawing for one of three 50 dollar Target gift cards in exchange for their participation. Exclusion criterion included expressing suspicion about the experimental manipulation or failure to complete the questionnaire. Thus, of those 367 participants, a total of 62 participants were excluded for the following reasons: 33 completed the second part of the survey more than 19 days after the first part of the survey; 1 completed the second part less than 9 days after completing part 1; 3 did not complete the experimental manipulation (mortality salience vs. dental pain induction); 4 completed both experimental conditions; 1 did not comply with instructions for the death-thoughts measure; 5 did not complete the worldview defense measure; 7 answered worldview defense questions with an obvious pattern, such as all 5s; and 8 did not complete the personal ideology measure. Excluded participants did not differ from included ones on demographic variables.

Demographics for the remaining 305 participants do not necessarily add up to 100% because some participants did not answer certain demographic items. Of participants included in analyses, 218 (71.5%) were women and 84 (27.5%) were men. Eight participants identified themselves as Latino or Central or South American (2.6%), 4

(1.3%) as African American, 14 (4.6%) as Asian/Asian American, 2 (.7%) as Arab/Arab American, 259 (84.9%) as Caucasian, and 18 (5.9%) as bi- or multi-racial. Almost half of the participants were freshman (n= 136), almost a quarter were sophomores (n= 73), almost a fifth were juniors (n= 60), 9.2 percent (n= 28) were seniors, and 1.0 percent were 5th year seniors or graduate students. One hundred and seven participants (35.1%) identified themselves as politically conservative, 57 (18.7%) as centrist, and 135 (44.3%) as liberal. The majority of participants came from middle to high-income families, with 60 (20.1%) with a yearly income above $150,000, 77 (25.2%) between $100,000 and $150,000, 54 (17.7%) between $75,000 and $99,999, 51 (16.7%) between $50,000 and $74,999, 14 (4.6%) between $40,000 and $49,999, 14 (4.6%) between $30,000 and $39,999, 13 (4.3%) between $20,000 and $29,999, 11 (3.6%) between $10,000 and $19,999, and 4 (1.3%) below $10,000.

Subjects were assigned to a 2 (mortality salience vs. control) x 2 (death-thought word stems vs. neutral word stems) between subjects design by placing them in the groups according to their answers to questions in a way that should approximate random assignment. Whether participants were placed in the death-thought word stems or neutral word stems groups was determined by their response to, "The third letter of my mother's maiden name is," "A-M" or "N-Z"). This resulted in 51.6% of participants filling out death-related word stems and 48.4% of participants filling out control word stems. Whether participants were placed in the mortality salience condition or control condition was supposed to be determined by the question, "The third letter of my father's mother's first name begins with," "A-M" or "N-Z." However, the question was actually written, "My father's mother's first name begins with," "A-M" or "N-Z." This was resulting in

approximately 80% of participants being placed in the mortality salience condition.

Therefore, we rotated which response placed the participants in the two groups

approximately every 50 participants. This resulted in 189 participants (62.2%) in the

dental pain condition and 115 participants (37.8%) in the mortality salience condition.

Measures

Gratitude questionnaire (GQ-6). The Gratitude Questionnaire (McCullough,

Emmons, & Tsang, 2001, see Appendix) is a 6-item questionnaire that was used in order

to create the appearance that we were measuring aspects of personality. It was originally

developed to assess differences in how disposed individuals are to experience gratitude in

daily life (McCullough et al., 2002). Participants rate items on a 7-point Likert scale (1=

strongly disagree, to 7= strongly agree). This one-factor scale has been found to have

acceptable internal reliability (Cronbach's α of .76), is related to peer ratings of gratitude,

and is related to other, similar constructs such as life satisfaction and optimism

(McCullough et al., 2002). In this study, Cronbach's α was .79.

Modified polarity scale (MPS). Tomkins (1964) created the original Polarity

Scale in order to measure individual differences in personal ideology. Tomkins'

formulation provides us with a way to operationalize and to measure what we call

"overall worldview." The original measure was composed of 59 paired statements, with

each pair composed of a statement representing a normative view and a statement

representing a humanistic view. Participants were asked to check any statement with

which they agreed. Thus a free choice format was used so that, in each pair, they could

check one statement, both statements, or neither statement. The scale was scored by

adding up the number of normative items endorsed to obtain a normativism scale score

and adding up the number of humanistic items endorsed to obtain a humanism scale score. Under advisement from Tomkins, Stone and Schaffner (1988) cut the number of pairs to 40 and revised and reworded many of the remaining items; however, the free choice response format was preserved as was the scoring method (see Appendix). Stone and Schaffner (1988) found both the humanism and normativism subscales of the MPS to have acceptable internal reliability (Cronbach's α of .78 for humanism and of .79 for normativism). Coppolillo (2006) similarly found acceptable internal reliability for each subscale, with a Cronbach's α of .75 for the humanism subscale and of .70 for the normativism scale. Acceptable internal reliabilities were also found in this study, with a Cronbach's α of .81 for the humanism subscale and of .78 for the normativism scale.

In concordance with Tomkins' theory, Stone & Schaffner (1997) report that humanism and normativism were independent from one another in three separate samples. Criterion validity has been found for both the humanism and normativism subscales of the MPS (Walter & Stone, 1997 as cited in Stone & Schaffner, 1997). Humanism was positively related to positive affect (r = .15), openness (r = .34), agreeableness (r = .31), and empathy (r = .34) and negatively related to authoritarianism (r = -.35) and social dominance (r = -.39). Normativism was positively related to negative affect (r = .17), authoritarianism (r = .28) and social dominance (r = .37) and negatively related to positive affect (r = -.18), openness (r = -.34), and agreeableness (r = -.32; Walter & Stone, 1997 as cited in Stone & Schaffner, 1997, *p* values not reported). Using the same wording but a different scoring system, de St. Aubin (1996) also found criterion validity. In the area of "assumptions about human nature" de St. Aubin (1996, p.159) found that humanism was related to trustworthiness (r = .42, *p*< .001), altruism (r = .50,

p< .001), and complexity (r = .25, *p*< .05), and normativism was negatively related to

altruism (r = -.25, *p*< .05). With respect to religion, humanism was positively related to

humanistic metaphors about God (r = .38, *p*< .01) and negatively related to normative

metaphors about God (r = -.38, *p*< .01) and God being perceived as an outside, rule based

force (r = -.48, *p*<.001). Normativism was negatively related to God being "a human

expression existing within humanity" (r = -.28, *p*< .05; de St. Aubin, 1996, p. 160).

Within political orientation, humanism was positively correlated with liberalism (r = .41,

p<.001) and negatively related to conservatism (r = -.30, *p*< .05), and normativism was

negatively correlated with liberalism (r = -.30, *p*<.05; de St., Aubin, 1996). As would be

expected, humanism scores were also positively related to values of Mature Love (r = -

.36, *p*< .01), Imagination (r = -.29, *p*< .05) and Broad Mindedness (r = -.39, *p*< .01) and

low prioritization of Clean (r = .40, *p*< .001) and Politeness (r = .25, *p*<.05) on the

Rokeach Values Scale. Normativism scores were negatively related to low prioritization

of Politeness (r = -.25, *p*< .05) and positively related low prioritization of Imagination (r

= .33, *p*< .01; de St. Aubin, 1996).

     Positive and negative affect scale (PANAS). The PANAS is a 20- item scale that

measures both positive (e.g. enthusiastic, alert) and negative (e.g. distressed, anger)

moods at the moment, today, over the past few days, over the past few weeks, over the

past year, or in general (Watson, Clark, & Tellegen, 1988, see Appendix). The

participants were asked how they felt "at the moment" for this study because shorter time

periods measure immediate emotional responses, and longer time frames measure more

stable differences in emotionality (Lucas, Diener, & Larsen, 2003). When participants

were asked to respond about how they were feeling "in this moment" internal consistency

coefficients were .89 for positive affect (PA) and .85 for negative affect (NA) (Watson et al., 1988, p. 1065). In this study, internal consistency coefficients were .91 for PA and .86 for NA. Convergent validity has been evidenced by associations with the Beck Depression Inventory, Hopkins Symptom Checklist, and State Anxiety Scale, with NA and PA subscales, respectively (Watson et al., 1988).

Rosenberg self-esteem scale (RSE). The 10-item Rosenberg Self-Esteem Scale (see Appendix) was used to measure participants' attitudes towards themselves (Cronbach's α = .82). The RSE has advantages over other self-esteem scales in that it is easy to administer and takes little time to complete (Rosenberg, 1965). In addition, Rosenberg (1965) claims that the scale is unidimensional and, thus, easy to interpret. Although some subsequent researchers have found two factors within the RSE, "positive self-esteem" and "negative self-esteem," these two factors seem to come from the same theoretical dimension of self-esteem (Carmines & Zeller, 1974). Other research has supported the unidimensional structure of the RSE and indicates that the RSE measures "experienced self-esteem" (Demo, 1985, p.1500). The RSE uses a 4-point Likert scale (0 = Strongly Disagree to 3 = Strongly Agree), and includes items such as "I feel that I have a number of good qualities" and "I feel I do not have much to be proud of." Items that are worded negatively are reverse scored so that, when added to the scores of the positively worded items, higher scores indicate higher experienced self-esteem. The scale has high internal reliability, Cronbach's α = .92 (Rosenberg, 1965) and .90 in this study, and has been found to have good construct and face validity (Demo, 1985; Rosenberg, 1965).

Death-thought accessibility (DTA). Death though accessibility was measured by having participants fill in two missing letters from 25 word fragments (see Appendix). Of

the 25 words, six can be completed as either neutral or death-related words. For example, the word fragment SK_ _ L could be completed as the neutral word *skill* or as the death-related word *skull*. Possible death-related words include *buried, dead, grave, killed, skull, and coffin.* Although not reportedly used in previous literature, words such as "noose" and "widow" misspelled as "widdow" were also counted (this only occurred in the death word stem condition, not in the neutral word stem condition). Many studies have found an increase in death-thoughts after mortality salience induction using the DTA (e.g., Greenberg et al., 1994, Greenberg et al., 2000, Arndt, Greenberg, Pyszczynski, et al., 1997, & Arndt, Greenberg, Solomon, et al., 1997). Despite the widespread use of this measure, to our knowledge, no reliability data have been reported. Possible reasons for the lack of reliability data include that the item responses are words rather than numbers and that it is not expected that people who receive the mortality salience condition would think of all six possible death words.

Worldview defense. We measured worldview defense with 5 evaluative questions (see Appendix), as in Greenberg and colleagues (1994, 2003). Participants responded to these 5 questions about each of the 6 essays (pro-American, anti-American, pro-Humanism, anti-Humanism, pro-Normativism, anti-Normativism). The pro- and anti-American essays were used with permission of Greenberg (personal communication February 25, 2009). The pro- and anti- Humanism and Normativism essays were developed for this study based on items from the Modified Polarity Scale and styled/formatted like the pro- and anti- American essays. Four experts on polarity theory were asked to categorize the four essays and were asked for suggestions to improve the essays. Three reviewers had 100% agreement with our categorization. The final reviewer

flipped the categorization of two of the essays, thus, having 50% agreement with our categorization. Of the 5 evaluative questions, 3 questions assessed the participants' assessment of the author (likeability, intelligence, and knowledge of the author) and two questions evaluating participants' opinions about the essay itself (how much participants agreed with the essay and how true the opinions expressed in the essay are). Questions were rated on a scale of 1 (negative rating) to 9 (positive rating). Greenberg et al. (1994) constructed two separate composite measures by 1) "subtracting the mean of the three anti-U.S. author items from the mean of the three pro-U.S. author items" and 2) "subtracting the mean of the two anti-U.S. essay items from the mean of the two pro-U.S. essay items" (p. 629). Greenberg et al. (1994) used only the composite made up of the two items referring to the author to measure worldview defense and did not report reliability or validity of the measure. Greenberg et al. (2003) used the entire 5-item questionnaire to evaluate worldview defense. They reported adequate internal reliability for the 5-item measure for both the pro-U.S. essay (Cronbach's $\alpha = .87$) and the anti-U.S. essay (Cronbach's $\alpha = .89$). In the current study, internal reliability for each of the 6 essays was excellent (pro-U.S. essay, $\alpha = .92$; anti-U.S. essay, $\alpha = .93$; pro-normativism essay, $\alpha = .92$; pro-humanism essay, $\alpha = .94$; anti-humanism, $\alpha = .91$; anti-normativism, $\alpha = .94$).

In order to determine the most appropriate way of using the measure to evaluate worldview defense, factor analyses of each of the six 5-item measures were conducted using principal components analysis (PCA). Before performing PCA, the data were inspected using the Kaiser-Meyer-Olkin values, which all exceeded the recommended .3, and Bartlett's Test of Sphericity, which all reached statistical significance, indicating the

factorability of the data. For each of the six measures, PCA revealed the presence of one factor with an eigenvalue exceeding 1, explaining 77.00%, 78.81%, 77.95%, 81.28%, 72.93%, and 79.61% of variance in the pro-American, anti-American, pro-normativism, pro-humanism, anti-humanism, and anti-normativism measures, respectively. Investigation of the scree plots indicated a clear bend at the second component for each of the six factor analyses. Using Cattell's (1966) scree test, it was decided that the each measure contains one factor. Thus, for each of the three categories of essay, the entire composite measure was used to measure worldview defense as in Greenberg and colleagues (2003).

Procedure

Figure 2. Measurement Timeline

```
                    ┌─────────────────────────┐
                    │   MPS and American      │
                    │ identity (here or at end)│
                    │        n= 174           │
                    └─────────────────────────┘
                         2 week break

                    ┌─────────────────────────┐
                    │ Gratitude Questionnaire │
                    │        N = 304          │
                    └─────────────────────────┘
                      ↙                      ↘
        ┌──────────────────┐         ┌──────────────────┐
        │ Mortality Salience│         │   Dental Pain    │
        │     n = 115       │         │    n = 189       │
        └──────────────────┘         └──────────────────┘
               ↓                             ↓
        ┌──────────────────┐         ┌──────────────────┐
        │    RSE/PANAS      │         │    RSE/PANAS     │
        │ (counterbalanced) │         │ (counterbalanced)│
        └──────────────────┘         └──────────────────┘
          ↙           ↘                 ↙           ↘
  ┌───────────┐ ┌───────────┐   ┌───────────┐ ┌───────────┐
  │Death-thought│ │Control Word│   │Death-thought│ │Control Word│
  │Association │ │Association │   │Association │ │Association │
  │  n = 57    │ │  n = 58    │   │  n = 89    │ │  n = 100   │
  └───────────┘ └───────────┘   └───────────┘ └───────────┘
       ↓            ↓                 ↓            ↓
  ┌───────────┐ ┌───────────┐   ┌───────────┐ ┌───────────┐
  │ Worldview │ │ Worldview │   │ Worldview │ │ Worldview │
  │  Defense  │ │  Defense  │   │  Defense  │ │  Defense  │
  │ (6 essays │ │ (6 essays │   │ (6 essays │ │ (6 essays │
  │counterbalanced│counterbalanced│counterbalanced│counterbalanced)│
  └───────────┘ └───────────┘   └───────────┘ └───────────┘
                         2 week break
                    ┌─────────────────────────┐
                    │  MPS and American identity│
                    │ (here or at the beginning)│
                    │        n = 130          │
                    └─────────────────────────┘
```

Figure 2. MPS= Modified Polarity Scale (Humanism/Normativism), RSE= Rosenberg Self-Esteem Scale, PANAS = Positive and Negative Affect Scale, Worldview Defense = reading each of the 6 essays and answering questions about the author and opinions expressed in each essay. Random assignment was made for whether participants received the MPS before or after the rest of the questionnaires, whether participants received Mortality Salience or Dental Pain questions, and whether participants filled out the Death-thought or Control word Association task.

Modified polarity scale (MPS). Greenberg and colleagues (1990) showed that priming of values that are part of one's worldview can affect worldview defense. In the current study, measuring participants' levels of humanism and normativism two weeks prior to or two weeks after the rest of the experiment allowed us to check to make sure that there was no unintended priming of participants' worldviews. We used counterbalancing to prevent possible order effects. If participants filled out the MPS two weeks before the remainder of the experiment, they were asked to read and sign a consent form prior to completing the MPS.

Questionnaires including experimental manipulation. Please see Figure 2 for an illustration of when participants were asked to fill out the different measures and at what point random assignment occurred. Participants visited a secure website, read and electronically signed the consent form if they had not already done so, and then completed the study online. Similar to other TMT research (e.g., Greenberg et al., 2003) the study was explained as an investigation of how personality traits influence social judgment. The participants then filled out a filler personality questionnaire. The next page manipulated mortality salience. Those in the mortality salience condition answered two items: "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 physically as you die and once you are physically dead" (e.g., Greenberg et al., 2003, p. 517). Those in the control condition answered the same questions but regarding dental pain. Next, participants filled out the self-esteem measure (RSE) and mood rating form (PANAS). Then participants filled out either the death-thoughts accessibility (DTA) measure or a neutral word completion task (to determine whether certain

humanism/normativism profiles influence priming of non-conscious death-thoughts). As reviewed above, Arndt and colleagues' (1997) found that removal of death-thoughts from awareness is necessary for worldview defense. Given this, both the DTA and the neutral word completion task were necessary to ensure that writing the death words would not bring the death-thoughts back into consciousness enough to prevent worldview defense.

Finally, the participants completed the social judgment task (worldview defense measure), which consisted of reading six short essays including pro- and anti- American, pro- and anti-humanism, and pro- and anti- normativism essays (counterbalanced for order) and rating the author of, and opinion expressed in, each of those essays (thus, measuring worldview defense). We retained the same format for the pro- and anti- humanism and pro- and anti- normativism essays as the pro- and anti-American essays in Greenberg and colleagues' (1992, 1994) research.

Results

Analyses

Predictor variables included the humanism and normativism scores and the mortality salience versus dental pain variable (rated 1 for mortality salience and 0 for dental pain). Our hypotheses centered on the possibility that different categories of people would show different susceptibility to mortality salience. Therefore, the first step of our data analysis involved categorizing our participants according to their levels of humanism and normativism. Participants that scored in the highest and lowest quartiles of humanism and normativism were labeled as high and low humanists and high and low normatives (with participants in the middle quartiles remaining unlabeled). After categorization of participants, ANOVAs and t-tests, explained in more detail below, were utilized to test hypotheses 1 through 6. Refer to Table 1 for descriptive statistics.

Descriptive statistics

Table 1

Means and Standard Deviations for All Measures by Condition: Mortality Salience, Dental Pain, and Overall

Measures	Mean (SD) Overall	Mean (SD) Mortality Salience	Mean (SD) Dental Pain
Humanism	29.20 (5.80)	29.21 (5.69)	29.20 (5.87)
Normativism	12.74 (5.57)	12.55 (5.49)	12.86 (5.62)
American identity	6.28 (1.95)	6.36 (1.99)	6.22 (1.94)
RSE	31.62 (5.18)	31.93 (5.32)	31.43 (5.10)
PANAS Positive	29.52 (8.48)	30.16 (8.48)	29.13 (8.48)
PANAS Negative	17.80 (6.62)	18.32 (7.05)	17.49 (6.35)
DTA*	1.78 (1.03)	1.93 (0.92)	1.70 (1.09)
American Defense	1.85 (2.53)	2.02 (2.49)	1.74 (2.55)
Normativism Defense	-0.78 (2.13)	-0.60 (2.25)	-0.88 (2.05)
Humanism Defense	3.13 (2.24)	3.28 (2.26)	3.03 (2.23)

Notes. RSE= Rosenberg Self-Esteem Scale, PANAS= Positive and Negative Affect Scale, and DTA= Death Thought Association questionnaire * Only participants who completed this measure were included, thus, Overall n= 157.

Table 2

Intercorrelations Among Demographic and Outcome Variables

	1	2	3	4	5	6	7	8
1. RSE	-	.32**	-.35**	.15**	.31**	.07	.20**	-.06
2. PANAS Positive		-	.04	.10	.07	.04	.04	-.03
3. PANAS Negative			-	-.10	-.24**	.05	-.24**	.23**
4. American Identity					.12*	-.06	.34**	-.07
5. Humanism Defense					-	- .25**	.39**	.09
6. Normativism Defense						-	-.04	.05
7. American Defense							-	-.01
8. DTA								-

Notes. RSE= Rosenberg Self-Esteem Scale, PANAS= Positive and Negative Affect Scale, DTA= Death Thought Association questionnaire, * $p < .05$, ** $p < .01$, n = 298

As can be seen in Table 2, self-esteem, negative mood (PANAS negative), and

American identity, were related to outcome measures. Therefore, regression analyses

were performed to determine whether self-esteem, negative mood, or American identity impacted the relationship between mortality salience and elicitation of death-thoughts, or between mortality salience and worldview defense. The two predictor variables (e.g., American identity and mortality salience versus dental pain) were entered into the first step of the regression equations in order to test for main effects, and the interaction term was entered into the second step of the regression equations.

There was a main effect for self-esteem predicting American defense ($\beta = .18$, $p = .01$), and a main effect for self-esteem predicting humanism defense ($\beta = .35$, $p < .01$). However, the interactions between mortality salience and self-esteem predicting American defense ($\beta = .03$, $p > .05$) and humanism defense ($\beta = -.08$, $p > .05$) were non-significant. Nor was there a three-way interaction between mortality salience, self-esteem, and high or low humanism predicting humanism defense ($\beta = -.15$, $p > .05$).

Similarly, there were main effects for American identity predicting American defense ($\beta = .35$, $p < .01$) and humanism defense ($\beta = .16$, $p < .05$). However, American identity did not moderate the relationship between mortality salience and American defense ($\beta = -.09$, $p > .05$). The three-way interaction among American identity, mortality salience, and humanism predicting humanism defense was also non-significant ($\beta = -.31$, $p > .05$).

Negative mood did not predict humanism defense ($\beta = -.08$, $p > .05$), nor did the two-way interaction between negative mood and mortality salience ($\beta = -.32$, $p > .05$) or the three-way interaction between negative mood, mortality salience, and high or low humanism ($\beta = .22$, $p > .05$). Negative mood did predict American defense ($\beta = -.26$, $p < .01$), but the interaction between mortality salience and negative mood did not predict

American defense ($\beta = .03$, $p > .05$). Similarly, negative mood predicted the number of death words reported ($\beta = .34$, $p < .01$), but the interaction between negative mood and mortality salience did not predict number of death words.

Taken together, the regression analyses suggest that the variables of self-esteem, negative mood, and American identity did not impact the relationship between mortality salience and elicitation of death-thoughts, or between mortality salience and worldview defense.

Manipulation Check

In order to determine whether the mortality salience manipulation worked, t-tests were conducted comparing the mortality salience and dental pain conditions on the number of death words elicited, and on each of the worldview defense measures. As can be seen in Table 3, no significant differences were found, suggesting that the manipulation did not work. However, one should not necessarily be surprised that no differences were found in the overall sample of participants, when humanists, non-humanists, normatives, and non-normatives are aggregated. Indeed hypotheses 1-4 posit that mortality salience will have different effects depending on the type and strength of worldview that is held. The aggregate picture lacks the resolution to reveal these interactive effects. Nonetheless, the aggregate findings are presented below.

Table 3

Outcome Measures for Participants in Mortality Salience or Dental Pain Conditions

	Mortality Salience		**Dental Pain**			
Measures	**M**	**SD**	**M**	**SD**	**df**	**t**
DTA*	1.93	0.92	1.70	1.09	136.61	-1.53
American Defense	2.02	2.49	1.74	2.55	304	-0.98
Normativism Defense	-0.60	2.25	-0.88	2.05	303	-1.18
Humanism Defense	3.28	2.26	3.03	2.23	304	-0.94

Note. *For DTA (Death-thought Association) homogeneity of variance was violated ($p = .012$); therefore, the t and df values for "do not assume equal variances" are reported.

In Figure 3, it can be seen that there was no difference between the mortality salience and dental pain groups for number of death words given in the DTA.

Figure 3. Death Words Completed in the Mortality Salience and Dental Pain Conditions
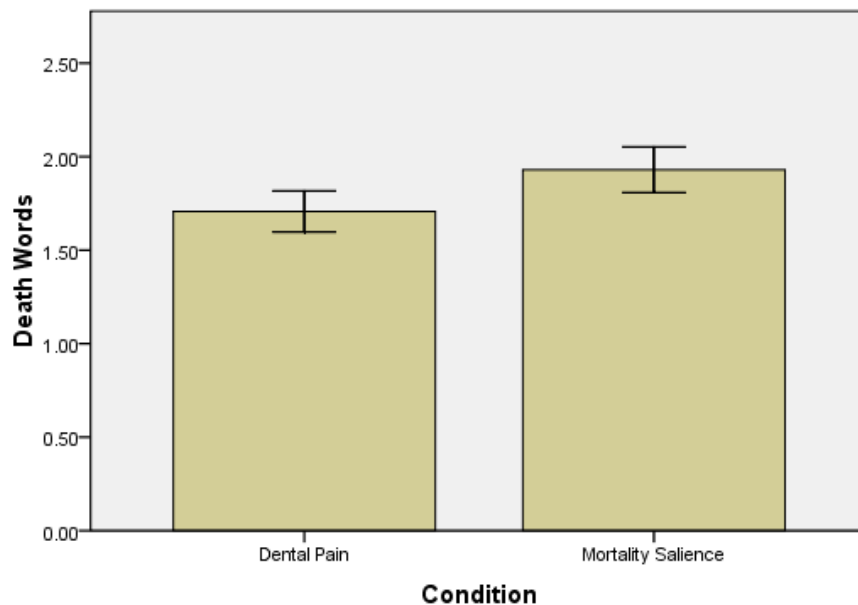
Figure 3: The figure depicts the mean (±SEM) death words completed by the two experimental groups.

In Figure 4, it can be seen that there was no difference between the mortality salience or dental pain groups for how strongly participants defended the American worldview. In Figure 5, it can be seen that there was no difference between the mortality salience or dental pain groups for how strongly participants defended the humanist worldview.

Figure 4. Defense of the American Worldview in the Mortality Salience and Dental Pain Conditions
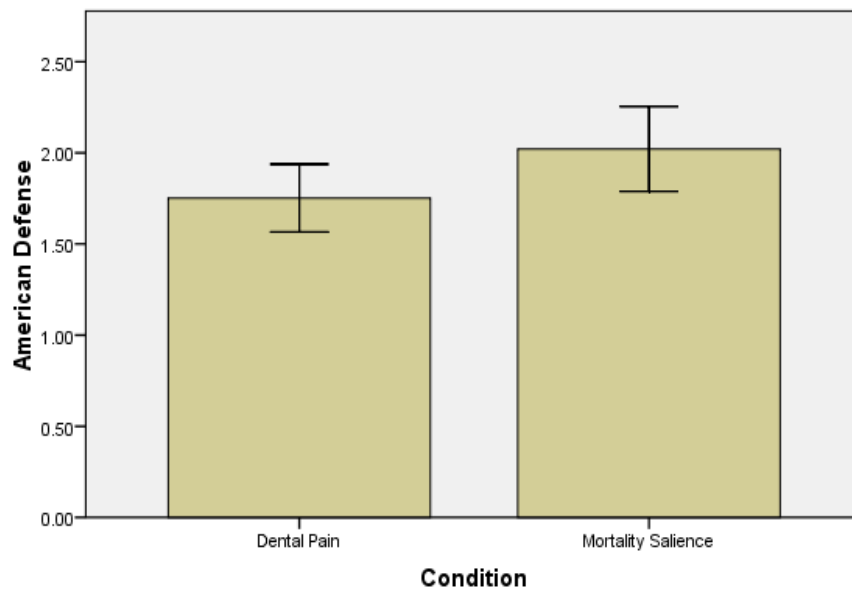
Figure 4: The figure depicts the mean (±SEM) American Defense score for the two experimental groups.

Figure 5. Humanism Defense by Participants in Mortality Salience and Dental Pain Conditions
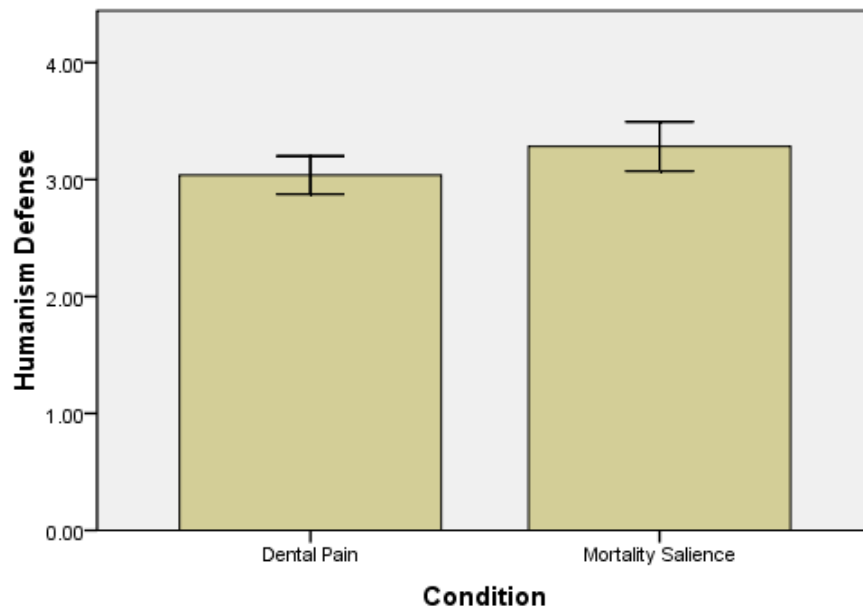
Figure 5. The figure depicts the mean (±SEM) Humanism Defense score for the two experimental groups.

Similarly, in Figure 6, it can be seen that there was no difference in how strongly participants defended the normative worldview in the mortality salience or dental pain groups. The scale for each of the worldview defense measures goes from -9 to +9. Thus, when a negative value is shown, such as for normativism defense, it indicates that participants rated the anti-normativism essay more positively than the pro-normativism essay.

Figure 6. Normativism Defense by Participants in Mortality Salience and Dental Pain
Conditions
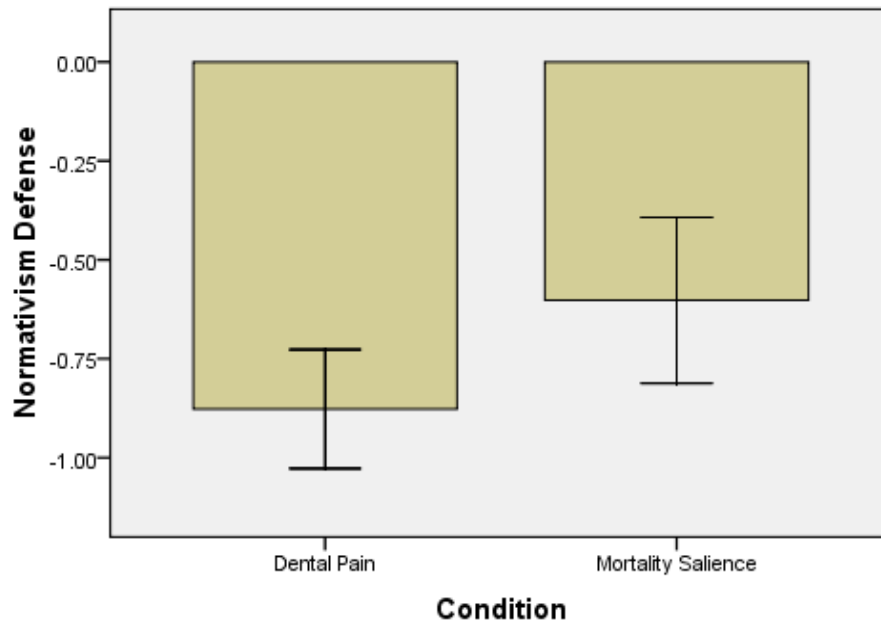
Figure 6. The figure depicts the mean (±SEM) Normativism Defense score for the two
experimental groups.

In order to test whether completing the death thought accessibility measure would
affect worldview defense, for the conditions of death-thought accessibility, the group
given death word stems was rated 1, and the group given neutral word stems was rated 0.
Then, this dichotomous variable was used as a predictor in a 2 (mortality salience vs.
dental pain) x 2 (death word stems vs. neutral stems) ANOVA with the three worldview
defense scores as criterion variables. As can be seen in Figure 7, there were no main
effects, nor was there an interaction effect, indicating that completing the death thought

accessibility measure did not affect defense of the American worldview in either the

mortality salience or the control condition.

Figure 7. Effects of Mortality Salience and Word Stem Type on American Defense
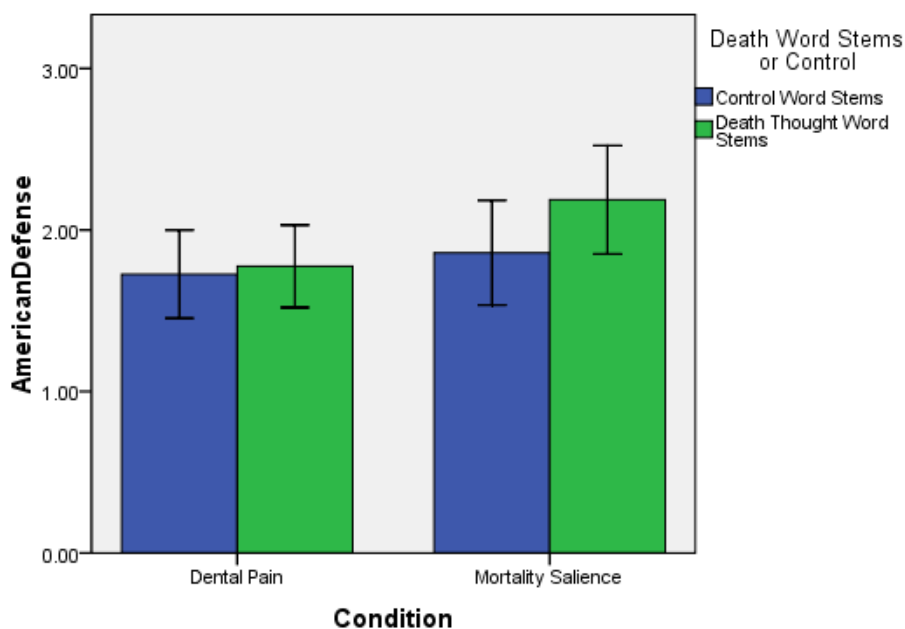
Figure 7. The figure depicts the mean (±SEM) American Defense score for the four groups: dental pain and control word stems, dental pain and death thought word stems, mortality salience and control word stems, and mortality salience and death thought word stems.

As can be seen in Figure 8, there were no main effects, nor was there an interaction

effect, indicating that completing the death thought accessibility measure did not affect

defense of the normative worldview in either experimental condition.

Figure 8. Effects of Mortality Salience and Word Stem Type on Normativism Defense
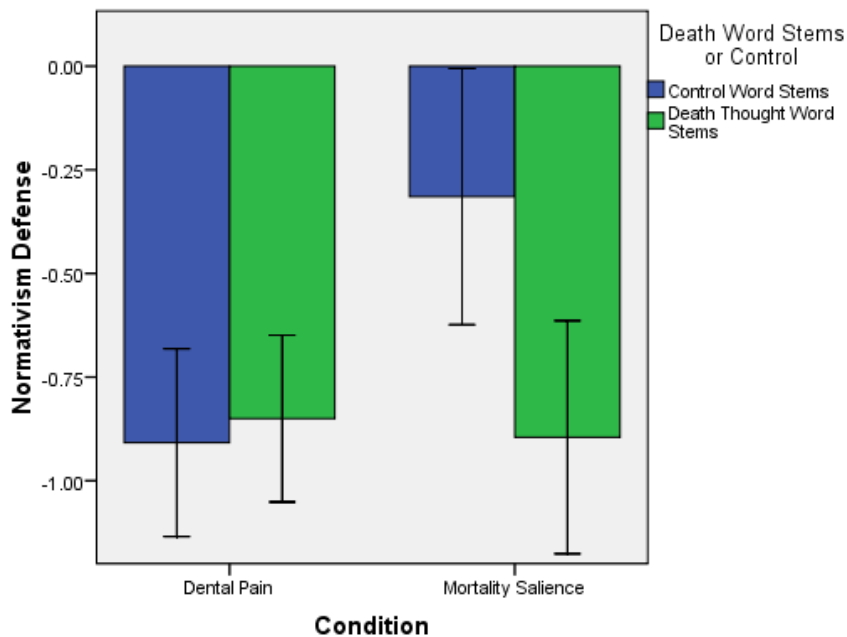
Figure 8. The figure depicts the mean (±SEM) Normativism Defense score for the four groups: dental pain and control word stems, dental pain and death thought word stems, mortality salience and control word stems, and mortality salience and death thought word stems.

As can be seen in Figure 9, there were no main effects, nor was there an interaction effect, indicating that completing the death thought accessibility measure did not affect defense of the humanist worldview in either the mortality salience or the control condition.

Figure 9. Effects of Mortality Salience and Word Stem Type on Humanism Defense
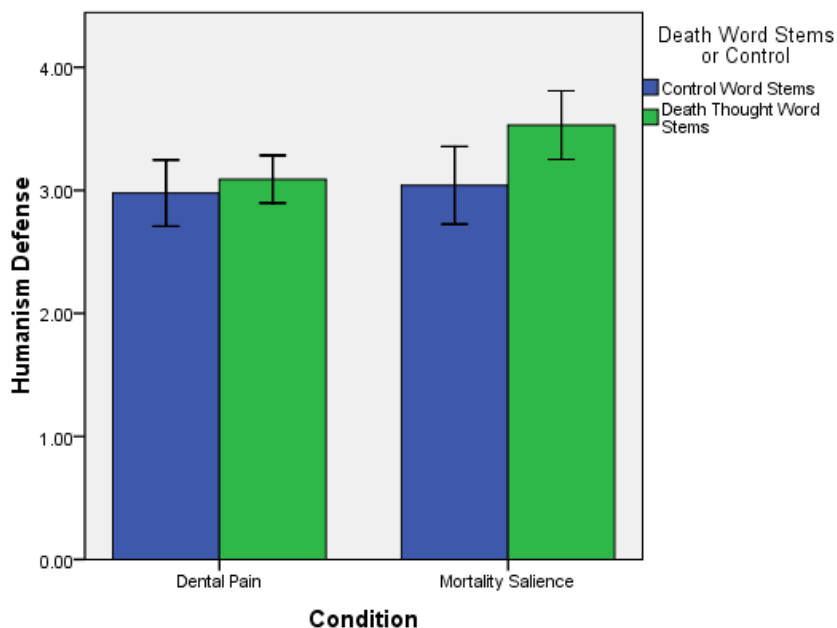
Figure 9. The figure depicts the mean (±SEM) Humanism Defense score for the four groups: dental pain and control word stems, dental pain and death thought word stems, mortality salience and control word stems, and mortality salience and death thought word stems.

Hypothesis 1

In order to test the hypothesis that mortality salience would increase the defense of the humanist worldview for humanists, a 2 (high humanism vs. low humanism) x 2 (mortality salience vs. dental pain) ANOVA was performed (please see Figure 10). There was a main effect for humanism (F (1, 176)= 22.27, $p<.001$, $\eta_p^2= .11$) such that participants who scored high in humanism (humanists) defended humanism more than participants who scored low in humanism (non-humanists) regardless of whether they were exposed to mortality salience or dental pain. There was no main effect of mortality salience on humanism defense ($F(1, 176) = .87$, $p> .05$). However, there was an

interaction effect ($F(1, 176) = 4.41$, $p< .05$, $\eta_p^2= .02$). Fisher's PLSD post hoc tests were conducted. Results indicated that the interaction between humanism and experimental condition was such that humanists defended humanism more in the mortality salience condition than in the dental pain condition ($t(85)= -2.33$, $p< .05$), but non-humanists did not defend humanism differently based on experimental condition ($t(91)= .78$, $p> .05$). Thus, hypothesis 1 was fully supported.

Figure 10. Effect of Mortality Salience on Humanism Defense, as a Function of Humanism
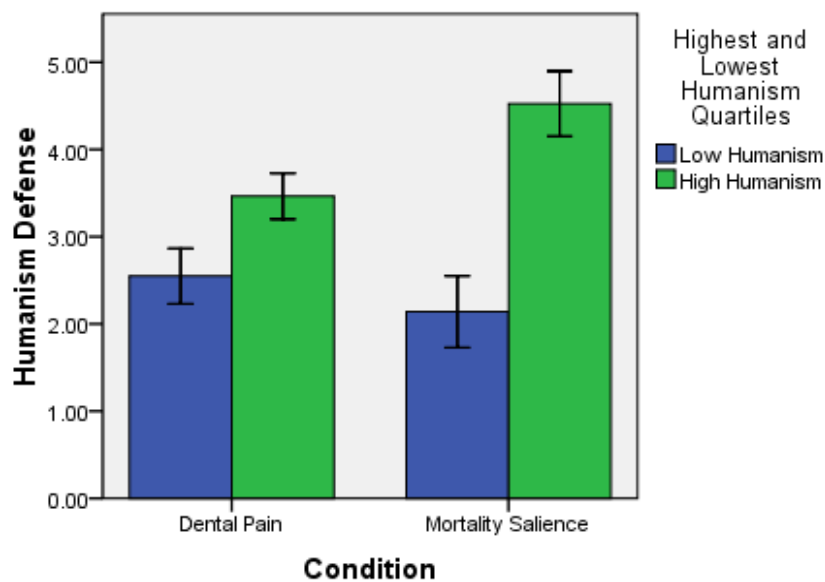
Figure 10. The figure depicts the mean (±SEM) Humanism Defense score for the four groups: dental pain and low humanism, dental pain and high humanism, mortality salience and low humanism, and mortality salience and high humanism.

Hypothesis 2

In order to test the hypothesis that mortality salience would increase the defense of the normative worldview for normatives, a 2 (high normativism vs. low normativism) x 2 (mortality salience vs. dental pain) ANOVA was performed (please see Figure 11).

There was a main effect for normativism ($F(1, 162) = 15.72$, $p<.001$, $\eta_p^2 = .09$) such that

participants who scored high in normativism (normatives) defended normativism more,

or were less negative towards a normative worldview, than participants who scored low

in normativism (non-normatives). There was no main effect of mortality salience ($F(1,$

$162)= .49$, $p> .05$), nor was there an interaction effect ($F(1, 162) = .36$, $p> .05$). Thus,

hypothesis 2 was not supported.

Figure 11. Effect of Mortality Salience on Normativism Defense, as a Function of
Normativism
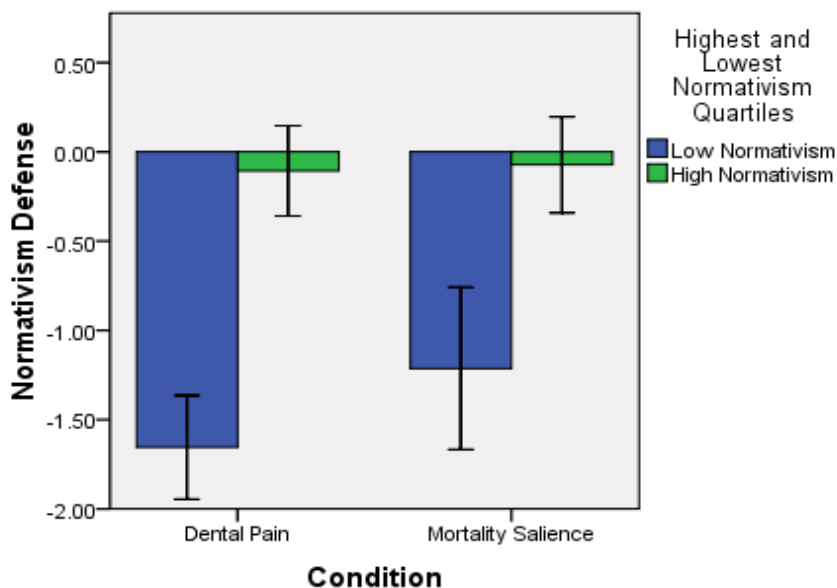
Figure 11. The figure depicts the mean (±SEM) Normativism Defense score for the four
groups: dental pain and low normativism, dental pain and high normativism, mortality
salience and low normativism, and mortality salience and high normativism.

Hypothesis 3

In order to test whether humanists would demonstrate a weaker mortality salience

effect than would normatives (that is, the effect of mortality salience on normative

defense by normatives would exceed the effect of mortality salience on humanist defense by humanists), a 2 (mortality salience vs. dental pain) x 2 (high versus low humanism) x 2 (high versus low normativism) x 2 (ideology defense-normativism defense versus humanism defense), mixed measure ANOVA was performed. Hypothesis 3 would be supported by a significant 4-way interaction among these factors. As expected given the results of hypothesis 1 and 2, there were two-way interactions between humanism and ideology defense ($F(1, 92) = 13.33$, $p<.001$, $\eta_p^2= .13$) and between normativism and ideology defense ($F(1, 92) = 4.81$, $p<.05$, $\eta_p^2= .05$). These interactions were such that humanists defended humanism more than non-humanists and non-humanists defended normativism more than humanists (see Figure 12).

Similarly, normatives defended normativism more than non-normatives and non-normatives defended humanism more than normatives (see Figure 12). There was no two-way interaction between experimental group and the repeated measure of ideology defense ($F(1, 92)= 1.55$, $p = .22$). There was no three-way interaction among ideology defense, mortality salience, and humanism ($F(1, 92)= 2.44$, $p = .12$). Nor was there a three-way interaction among ideology defense, mortality salience, and normativism ($F(1, 92)= 0.97$, $p = .33$). Finally, contrary to our expectations, there was no four-way interaction among ideology defense, experimental group, normativism, and humanism ($F(1, 92)= 2.46$, $p = .12$); thus, hypothesis 3 was not supported.

Figure 12. Relative Effect of Mortality Salience in Humanists and Normatives as Indicated by Defense of Their Respective Worldviews
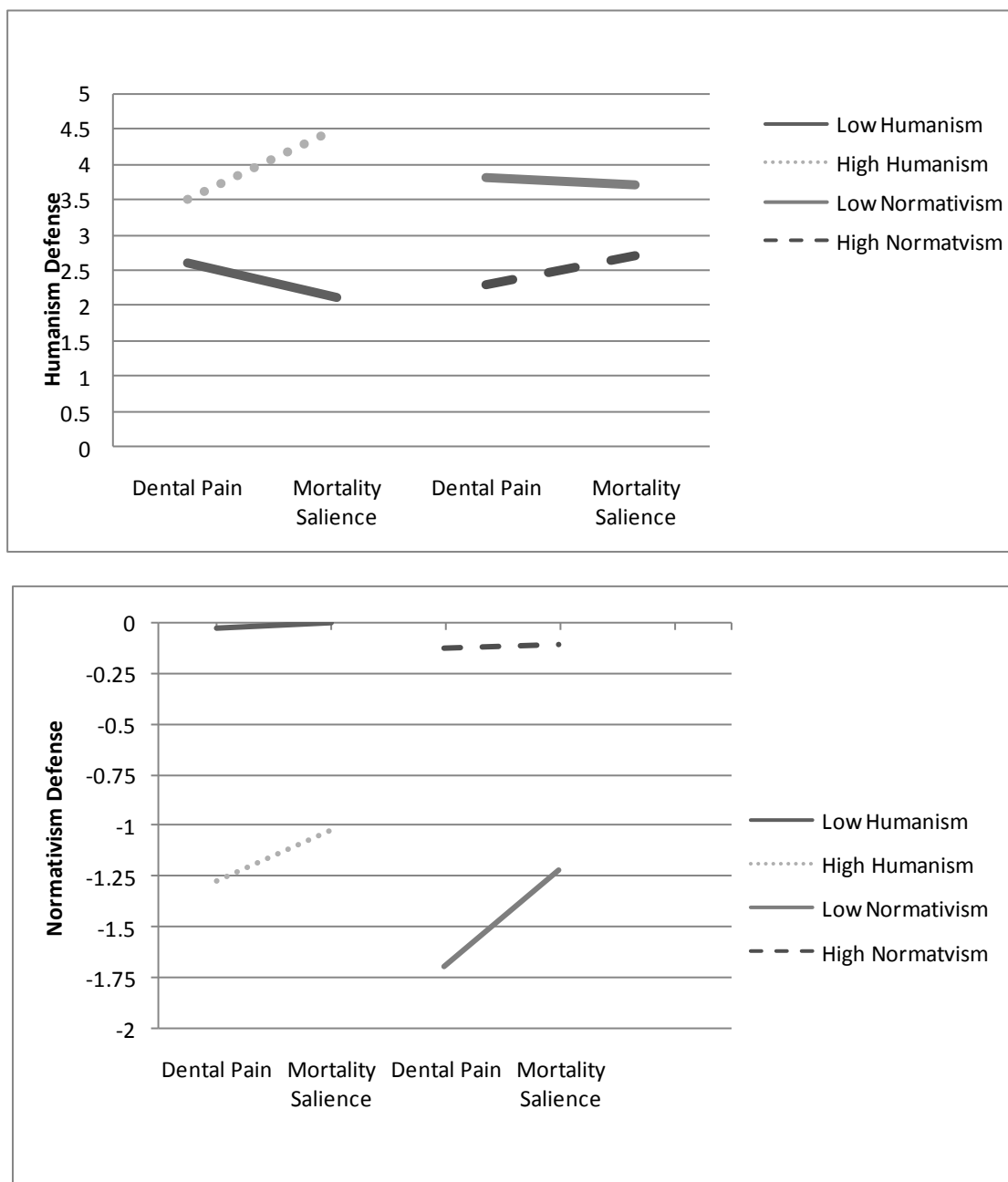
Figure 12. The figure depicts the mean Humanism Defense and Normativism Defense scores for the eight groups: dental pain and low humanism, dental pain and high humanism, mortality salience and low humanism, mortality salience and high humanism, dental pain and low normativism, dental pain and high normativism, mortality salience and low normativism, mortality salience and high normativism.

Hypothesis 4

In order to test the hypothesis that mortality salience would lead to defense of the American worldview for normatives (there would be a larger difference between the pro-American and anti- American essays in the mortality salience condition than in the dental pain condition), a 2 (high normativism vs. low normativism) x 2 (mortality salience vs. dental pain) ANOVA was performed (please see Figure 13). No main effects were found for normativism (F (1, 162) = .25, $p>.05$) or for experimental condition (F(1, 162) = .04, $p> .05$), nor was there an interaction effect (F(1, 162) = 1.03, $p> .05$). Thus, hypothesis 4 was not supported.

Figure 13. Effect of Mortality Salience on American Defense, as a Function of Normativism
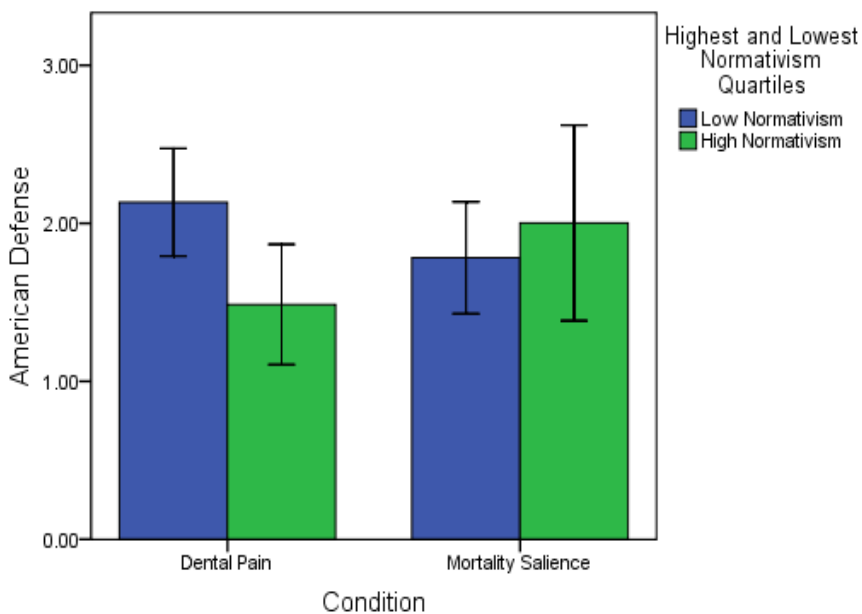
Figure 13. The figure depicts the mean (±SEM) American Defense score for the four groups: dental pain and low normativism, dental pain and high normativism, mortality salience and low normativism and mortality salience and high normativism.

Hypothesis 5

In order to test the hypothesis that mortality salience would not lead to defense of the American worldview for humanists (for humanists, the mean American defense score would not be higher in the mortality salience condition than in the control condition), a 2 (high humanism vs. low humanism) x 2 (mortality salience vs. dental pain) ANOVA was performed (please see Figure 14). No main effects were found for humanism ($F(1, 175)=$ .81, $p>.05$) or for experimental condition ($F(1, 175) = .003, p> .05$), nor was there an interaction effect ($F(1, 175) = .001, p> .05$). Although the result is consistent with hypothesis 5, its impact is necessarily limited in light of a lack of support for hypothesis 4, as normatives did not defend the American worldview more in the mortality salience condition.

Figure 14. Effect of Mortality Salience on American Defense, as a Function of Humanism
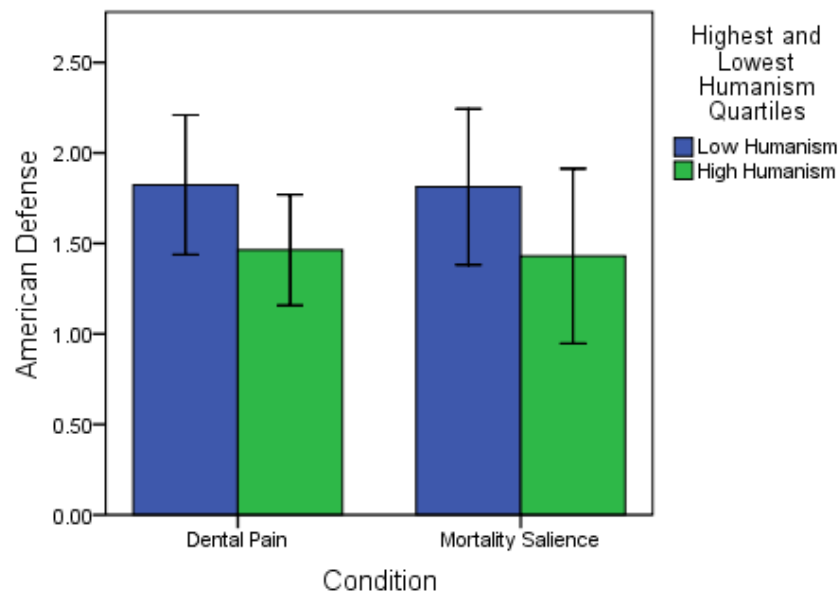
Figure 14. The figure depicts the mean (±SEM) American Defense score for the four groups: dental pain and low humanism, dental pain and high humanism, mortality salience and low humanism, and mortality salience and high humanism.

Hypothesis 6

In order to test the hypothesis that humanists and normatives would not differ on the number of death words elicited in the mortality salience condition, a 2 (high normativism vs. high humanism) x 2 (mortality salience vs. dental pain) ANOVA was performed (please see Figure 15). No main effects were found for ideology (F (1, 82)= 1.08, $p>.05$) or for experimental condition (F(1, 82) = .06, $p> .05$). Nor was there an interaction effect (F(1, 82) = .87, $p> .05$), thus, supporting our hypothesis that humanists and normatives would not differ on the number of accessible death-thoughts.

Figure 15. Effect of Mortality Salience on Number of Death Words, as a Function of High Ideology
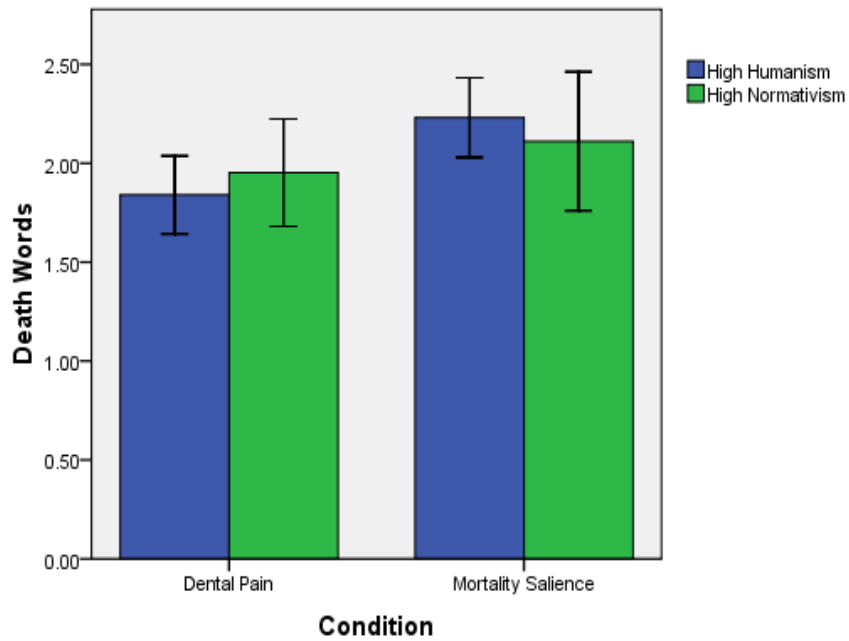
Figure 15. The figure depicts the mean (±SEM) number of death words elicited for the four groups: dental pain and high humanism, dental pain and high normativism, mortality salience and high humanism, and mortality salience and high normativism.

Discussion

Summary of Results

This dissertation investigated the generalizability of Terror Management Theory (TMT) and the mechanisms by which individual difference variables work in the TMT process. More specifically, the project investigated 1) Whether one's personal worldview moderates the impact of mortality salience on traditional, cultural worldview defense, 2) whether one's personal worldview determines the strength of defense of that personal worldview, and 3) whether personal worldview moderates between proximal defenses and death-thoughts.

The manipulation check indicated that there were no differences between the mortality salience and dental pain conditions on the number of death words or on worldview defense measures, suggesting that the manipulation did not work. This is not necessarily surprising, given that the analyses were performed on an aggregate of all of the participants, including humanists (participants in the top quartile on the humanism scale), non-humanists (participants in the bottom quartile on the humanism scale), normatives (those in the top quartile on the normativism scale), and non-normatives (those in the bottom quartile on the normativism scale). Multiple hypotheses predicted that mortality salience effects would depend on the type and strength of worldview held, which would not necessarily be seen in an aggregate picture.

Humanists defended humanism more than non-humanists, regardless of experimental condition. Additionally, the hypothesized interaction effect between humanism and mortality salience was present, such that humanists defended humanism

more in the mortality salience condition than in the dental pain condition. In contrast, non-humanists did not defend humanism differently based on experimental condition. Although normatives defended normativism more, in general, than did non-normatives, mortality salience did not increase the defense of the normative worldview for normatives. Contrary to expectations, humanists and normatives did not differ in their defense of their respective worldviews (i.e., the effect for normativism defense by normatives versus non-normatives in the mortality salience condition was not different from the effect for humanism defense by humanists versus non-humanists in the mortality salience condition, see Figure 12, p. 70).

Among normatives, mortality salience had no impact on the differential rating of the pro- and anti-American essays. Similarly, mortality salience did not lead to defense of the American worldview for humanists (for humanists, the mean American defense score was not higher in the mortality salience condition than in the non-mortality salience condition). Although this supports the prediction that mortality salience would not lead to defense of the American worldview for humanists, it does not fit with our prediction that the strength of the mortality salience effect would be different for humanists and normatives. Humanists and normatives did not differ on accessible death-thoughts, regardless of experimental treatment.

Interpretation of Results

 Manipulation check. As stated above, the manipulation did not appear to work; there were no differences between the mortality salience and dental pain conditions on the number of death words or on worldview defense measures. Again, this is not necessarily surprising, given that the analyses were performed on all participants,

regardless of worldview. Multiple hypotheses stated that holding different worldviews would moderate the effect that mortality salience has on worldview defense, which would not necessarily be seen in analyses that included all participants.

However, it is also possible that the manipulation did not work. The Rosenberg Self-Esteem scale was used as one of our filler measures. Many studies have found that self-esteem buffers existential anxiety and, thus, decreases the need for worldview defense (e.g., Greenberg et al., 1992; Harmon-Jones et al., 1997). It is possible that simply answering the items on the self-esteem scale made participants cognizant of their self-esteem and decreased their need to defend their worldviews. If that were the case, one would expect participants with higher self-esteems to have defended their worldviews less than participants with lower self-esteem after mortality salience. However; no interaction between mortality salience and self-esteem was found. Nor was there any relationship between self-esteem and number of death-thoughts available after the filler measures. Additionally, there have been studies that refute the importance of explicit self-esteem (e.g., Baldwin & Wesley, 1996) and show the importance of implicit self-esteem (Schmeichel et al., 2009), which was not measured or manipulated in this study. The results of our analyses taken together with the current literature suggest that the measurement of self-esteem was not the cause of the lack of overall mortality salience effects.

Hypothesis 1. As was predicted, mortality salience increased the defense of the humanist worldview for humanists. This is congruent with TMT and past, culture specific, TMT research. Thus, findings indicate that TMT may be generalizeable to

defense of overall worldviews in addition to defense of more specific, cultural worldviews.

Hypothesis 2. Surprisingly, mortality salience did not increase the defense of the normative worldview for normatives. Although normatives did defend normativism more than non-normatives, the defense was not dependent on experimental condition. There are a number of potential reasons for the failure of normatives to demonstrate the typical mortality salience effect.

First, there may have been a social desirability bias. The wording of the anti-normativism essay is more congruent with messages taught in American institutions of higher learning, than is the wording of the pro-normativism essay. For example, "I have a lot of trouble with people who believe that there is one "truth" and one "right way" of being and that people don't deserve love and respect unless they are living out the norms and rules that put them on that 'right path'" may fit more with our American, collegiate culture than "Although it would be nice to think that people are all good at heart, the truth is that most people only have their own best interests in mind. In fact, if people were actually honest with each other, I think we would find much more hostility and hatred in the world." While the pro- and anti- normativism essays did accurately represent the views of someone who would be for and against a normative worldview, perhaps a different pro-normative essay could have expressed the ideals of a normative person in a more nuanced way, without seeming to go against the messages sent in an institution of higher learning.

Another potential reason that mortality salience did not induce defense of the normative worldview could be that normatives do not respond to the mortality salience

induction in the same way that humanists do. In other words, the possibility remains that mortality salience does not provoke worldview defense for normatives. This would run counter to all of the other TMT literature.

Hypothesis 3. The hypothesis that humanists would defend the humanist worldview less strongly than normatives would defend the normative worldview (in other words, that there would be a stronger effect of mortality salience on respective worldview defense by normatives, than by humanists) was not supported. This hypothesis was an extension of previous literature, but has not been explicitly suggested by that literature. Past research has suggested that securely attached individuals do not engage in worldview defense (Mikulincer & Florian, 2000), nor do those who value tolerance (Greenberg et al., 1992). Trust and tolerance are not, in themselves, worldviews; however, people who have a humanistic worldview are more trusting of others and see the good in all human beings (de St. Aubin, 1996). Thus, it would be predicted that humanism would be related to secure attachment style and to tolerance.

The majority of past research had left unclear whether securely attached individuals did not defend cultural worldviews because their secure attachment protected them from existential anxiety, or because they defended themselves from this anxiety in another way. However, one specific study suggested that securely attached individuals seek interpersonal closeness as a way to buffer their anxiety (Mikulincer, Florian, & Hirschberger, 2004). This research has now been incorporated into the anxiety buffer hypothesis of TMT, such that worldview, self-esteem, and relationships are all components of the anxiety buffer that protects humans from existential terror (e.g., Pyszczynski & Kesebir, 2011). Similar research determining whether those who value

tolerance are less affected by mortality salience or whether they defend their worldviews differently has yet to be performed. By investigating what would happen if those views of trust and tolerance were the ones challenged after mortality salience, this study began to parse out those potential effects. TMT would assert that a direct challenge to one's worldview after mortality salience (for instance, the anti-normative essay challenges a normative worldview) would result in worldview defense. However, we had hypothesized that humanists would be less affected than normatives by mortality salience. It seems that, in line with TMT and the more recent TMT studies with attachment, humanists and normatives defend their worldviews to equal extents following mortality salience.

Hypotheses 4 and 5. The hypothesis that mortality salience would lead to defense of the American worldview for normatives (mortality salience would have an impact on the differential rating of the pro- and anti- American essays for normatives but not for humanists) was not supported. The hypothesis that mortality salience would not lead to defense of the American worldview for humanists was statistically supported. However, hypotheses 4 and 5 were meant to show a contrast between how humanists and normatives would defend the American worldview after mortality salience. Given that neither normatives nor humanists defended the American worldview more in the mortality salience condition, neither hypothesis was supported.

It is possible that humanists and normatives have different levels of American identity and that this could affect American worldview defense. Therefore, further analyses were conducted to see whether American identity was related to American defense and whether American identity was related to humanism and normativism. If

American identity were more strongly related to normativism than to humanism, normatives would be expected to defend the American worldview more strongly than would humanists after mortality salience. However, the analyses indicated that neither normativism nor humanism was related to American identity or to American defense. American identity was related to American defense, although there was no interaction between American identity and mortality salience. The question remains as to why mortality salience did not increase American defense among those with strong American identity. Though not directly related to our hypotheses, this finding goes against existing TMT literature (e.g., Greenberg et al., 1990).

Hypothesis 6. The hypothesis that humanists and normatives would not differ on the number of death words elicited in the mortality salience condition was supported. The non-difference in number of death words could have occurred if the mortality salience effect did not work. The mortality salience effect did work for humanists in that they defended their worldview more in the mortality salience condition; however, mortality salience did not increase the number of death words for humanists or normatives. Thus it is difficult to say whether the manipulation worked. Let us assume that the manipulation did work. Humanists and normatives did not differ on the number of death words elicited, so it is likely that mortality salience primes death-thoughts equally for humanists and normatives. This suggests that differences found in defense of worldviews by humanists and normatives occur in processes that follow death-thought evocation (see p. 3, Figure 1 for the steps in the TMT model of defense against existential anxiety).

Limitations

In addition to the potential problems discussed above, methodological limitations remain. It is troublesome that the anti-American essay used in Greenberg and colleagues' (1992, 1994) research includes incorrect grammar and a poor command of the English language (e.g., "The system here is set up for rich against the poor…This no sympathy for people…Its all one group putting down others…America is a cold country that is unsensitive..."). On the other hand, there are no spelling or grammatical errors in the pro-America essay (see Appendix). The poor English may influence ratings of '"how intelligent do you think this person was" and "how knowledgeable do you think this person was," and thus prevent a direct measure of worldview defense. The inclusion of improper grammar may have produced a confound between the defense of worldview and the defense of like-intelligence. Or, it may measure worldview defense, but only if intelligence is a valued part of that worldview. The format of the pro- and anti- American essays is also problematic in that it explicitly sets up opposition between in-group and out-group members rather than sticking to differences in worldview. While recognizing these potential problems, the same problems are potential contaminants of any of the TMT literature that uses these essays. The standard essays and formatting of new essays were retained for the purposes of direct comparison with the existing TMT literature.

Also, our participants completed the questionnaires on-line and, thus, could have done so anywhere with the necessary computer and internet access. The results of the study could have been influenced by the environment in which the surveys were completed. Dormitory environments may have buffered the mortality salience effect. Alternatively, the potential variance in environments might have introduced variance into

the results and reduced the power of the analyses to reveal mortality salience effects. The

participants may have had roommates or friends in the room, and they may have been

filling out the questionnaires as quickly as possible to obtain their extra credit. Had they

filled out the questionnaires in the room with a researcher present, the participants may

have been reminded that they were completing the study not only for extra credit, but also

to help someone complete important research. Other than the participants who were

excluded for clearly not putting an effort into completing the questionnaires (e.g., filling

out all 5's for a measure), we do not have data indicating that participants paid attention

differently or took the tasks less seriously than if they had been in a laboratory setting

(the majority of TMT research has been in a laboratory).

The study started with 305 participants. However, in order to address our

hypotheses, this group was both quartiled and assigned to 4 different conditions. Thus,

there were significantly fewer participants in the conditions being compared in the

analyses than was originally expected. This resulted in many of the analyses having poor

power. The least powerful tests were those that included dental pain versus mortality

salience, an important test for our hypotheses, which ranged from $\beta = .05\text{-}.30$. The

highest power for tests of possible interaction effects was $\beta = .68$. According to

G*Power, with a medium effect size ($\eta^2 = .25$) and 4 groups, a sample size of 180 should

have been sufficient to obtain a power of .80. However, with a small effect size ($\eta^2 = .10$)

and 6 groups, a sample size of 1,096 would be required to obtain a power of .80. Thus, it

is possible that more significant effects would have been found with a higher N or with a

more equal number of participants in each of the groups. Effect sizes in TMT literature

range from r = -.48-.99, but are generally small to medium (*M*= .36, *SD*= .19) even with

smaller overall sample sizes (range of N= 17-343, *M*= 87.3, *SD*= 50.8; Burke, Martens, & Faucher, 2010). The effect and sample sizes of previous studies combined with the observation that our effect sizes were so low in the non-significant tests, make it is unlikely that simply increasing the number of participants would have made those tests significant.

Our sample was limited to mainly female (71.5%), Caucasian (84.9%) college students from high-income families (63% above $75,000/year). College students may react differently to mortality salience than older participants. Indeed, Maxfield and colleagues (2007) found that older adults (age 61-84) did not judge moral transgressions more harshly after mortality salience; however, younger participants (age 17-37) did. And, in their meta-analysis of 164 articles (277 studies) of TMT research, Burke et al. (2010) found that mortality salience manipulations affect college students more than they affect non-college students. Similarly, mortality salience manipulations affect Americans more than they affect Europeans and Israelis, or Asians (Burke et al., 2010). However, they did not find that gender affected mortality salience effects (Burke et al., 2010). No studies were found that assess whether income is related to mortality salience effects. Thus, it is unclear whether the results of the current study would generalize to a more ethnically, age, and socioeconomically diverse sample.

Strengths

Despite the limitations of this study, the methodology and findings do make a significant contribution to the ever-growing TMT literature. First, prior TMT literature has neglected to measure overall worldview (one's values and beliefs across all areas of life). Therefore, it was unclear whether mortality salience affects defense of one's overall

worldview or only of smaller, more specific, parts of one's worldview. It was also unclear whether a person's overall worldview affects mortality salience effects. Given the lack of consideration paid to overall worldview, we felt it necessary to investigate people's overall worldviews. The Tomkins' Polarity Scale (1964) is a way to measure one's overall way of looking at the world, and has been shown to be related to more specific worldviews, such as religion, philosophy, and politics. Thus, our use of this scale as a way to investigate people's overall worldviews allowed us to measure whether the anxiety buffer hypothesis of TMT applies only to the usefulness of defending specific cultural worldviews when confronted with existential anxiety, or whether it goes beyond that and also applies to the usefulness of defending overall worldviews. The employment of the Tomkin's Modified Polarity Scale will also allow future TMT research to investigate if and how overall worldview impacts TMT dynamics. The TMT literature contains a number of experimental designs aimed at delineating the component processes of mortality salience effects. The addition of Tomkins' Modified Polarity Scale to those designs would vastly increase our understanding of how personal and personality variables act at the level of each component process.

The study suggests that the overall worldviews of humanism and normativism were not related to cultural worldview, at least as it is typically measured. Specifically humanism and normativism were not related to American identity and, similarly, did not moderate the relationship between mortality salience and defense of the American worldview. Given that being humanist or normative was unrelated to American identity, one would not expect humanists and normatives to differ in their defense of the American worldview in the mortality salience condition. However, if TMT is generalizable to

overall worldviews, versus smaller, cultural worldviews, one would expect humanists to defend the humanist worldview and normatives to defend the normative worldview in the mortality salience condition. At least for humanists, TMT did generalize to include defense of an overall worldview. The construction of the normative essays in the current experiment may have unexpectedly biased the results. Thus, future research may determine whether TMT does not apply to normatives, or whether the way that normative worldview defense was measured in this study impacted the results. On a separate point, knowledge that TMT did work for a more comprehensive view of worldview adds to the growing body of TMT literature and further strengthens the theory.

Past research had rarely addressed where individual differences entered the TMT model (with the exception of self-esteem) to moderate the relationship between mortality salience and worldview defense. Results of this study indicate that the overall worldview does not influence evocation of death-thoughts. Therefore, if one's overall worldview does moderate the relationship between mortality salience and worldview defense, as was the case with humanism, that moderation occurs between evocation of death-thoughts outside of awareness and distal defenses (i.e., worldview defense; see Figure 1, p. 3 for TMT model). Individual differences in personal ideology do not appear to moderate the ability of mortality salience to prime death-thoughts. Being humanist or non-humanist affects worldview defense after the death-thoughts have been primed.

Together, these findings may help clarify past research. For example, Greenberg and colleagues (1992) found that tolerance decreased American worldview defense and that liberals (who espouse more tolerance) actually rated the opposing views more positively. So, given that humanists are also more tolerant and liberal (de St. Aubin,

1996) and that humanists did defend their own worldview but did not defend the American worldview, it seems likely that holding a tolerant worldview does not influence death thought evocation. Instead, such a worldview is defended by acceptance of people with views that oppose one's own, as long as those views do not threaten the value of tolerance.

Future Directions

The results from this study have, at least in part, further strengthened TMT in that worldview defense seems to go beyond cultural worldviews to overall worldviews. TMT theory suggests that people defend their worldviews after mortality salience. However, given that normatives *did not* defend the normative worldview more in the mortality salience condition, future research could investigate whether this is because TMT does not apply to normatives (which seems unlikely but is a possibility), or whether there is a better way of measuring normativism defense. Normativism has been found to be related to conservativism (de St. Aubin, 1996). Conservatives devalue people with anti-conservative views after mortality salience (Greenberg et al., 1992). Thus, it would be expected that normatives would devalue people with anti-normative worldviews after mortality salience. However, being normative is not the same as being conservative. It is possible that normatives are not affected by mortality salience. Or, it is possible that, like securely attached individuals (Mikulincer et al., 2004), normatives have another way to buffer anxiety other than to devalue people or essays that profess anti-normative views.

It is also possible that normatives are affected by mortality salience in the same way that humanists are, but that, as mentioned above, our pro- and anti- normative essays did not capture pro- and anti- normativism in a way that avoided social desirability bias.

Beyond possible problems with the pro- and anti- normative essays, future research could address the problems inherent in the pro- and anti- American essays. As mentioned previously, the pro- and anti- American essays appear to make the writer of the pro- American essay seem more intelligent than the writer of the anti- American essay. Particularly in a college environment, it would seem that intelligence is a culturally prescribed value. If that is the case, then the findings in this study, and other TMT research that utilized these studies, may be tainted. Thus, future research should reconstruct the pro- and anti- American essays such that the authors appear to have equal intelligence, then compare responses to the new essays with responses to the current pro- and anti- American essays.

As discussed previously, Pyszczynski and colleagues (1996) found that natural environments, such as a funeral parlor, can bring death to a sub-conscious level of awareness and can engender mortality salience effects. However, in that study, location was the mortality salience manipulation. It remains unknown whether survey settings can influence mortality salience effects. We know that context matters. Simon and colleagues (1997) manipulated participants' mode of thinking through experimenter dress and language, and found that mortality salience effects did not occur for participants who were in the rational mode of thinking (formal dress/speech of experimenter) but did occur for participants who were in the emotional mode of thinking (informal dress/speech of experimenter). Thus, it seems likely that different locations could also bring about different modes of thinking, depending on the different characteristics of the locations. Future research may investigate whether TMT effects occur as strongly when completed by participants in the comfort of their home environments versus in a laboratory.

Additional variables may accompany these contextual differences and potentially

influence results, such as whether friends are present, reminders about the importance of

the study, researcher presence in the room, etc.

While the current investigation focused on overall worldview, other individual

difference variables comprise fertile ground for further research, and researchers could

investigate how individual difference variables are related to defense of cultural

worldviews and of overall worldviews. One rich area of individual differences lies in the

personality development of individuals. College students are generally developing their

identities in multiple areas in a stage that has been labeled "emerging adulthood" (Arnett,

2004, p. 4). The vast majority of TMT research has been conducted with college students.

Yet, as mentioned above, Maxfield and colleagues (2007) found that mortality salience

did not have the expected worldview defense effects for older adults (age 61-84) but did

for younger participants (age 17-37). Somewhat contradicting this, Burke and colleagues'

(2010) meta-analysis indicated that mortality salience manipulations affect college

students more than they affect non-college students, but did not find differences for age

or gender. A possible explanation for these findings could be that participants are in

different stages of personality development. Even within emerging adulthood, a stage that

roughly includes 18-29 year olds (though individuals can enter it earlier or leave it later),

individuals are often at different stages of identity development in the areas of love and

sex, career, and religious beliefs and personal values (Arnett, 2004).

The population used in the current study was made up of participants who

generally fit into the developmental stage of emerging adulthood. Thus, there is likely

variability within the sample in identity development and self-assurance in values. There

is some indication that personal values influence mortality salience effects. Joireman and Duell (2007) found that participants who were low in self-transcendent values evaluated human-related charities more highly in the mortality salience condition than in the dental pain condition. Experimental condition did not affect the ratings of human-related charities for participants high in self-transcendent values. Future research should investigate whether state of identity development and security in one's values affect mortality salience dynamics.

Another stage of personality development that could influence mortality salience effects is generativity versus stagnation. Someone who is highly generative, someone who invests much of his/herself for the benefit of future generations (McAdams & de St. Aubin, 1992), would have already developed, or would be in the process of developing, his/her symbolic immortality. Generativity might resemble religiosity in its ability to modulate mortality salience effects. Like intrinsically religious people, whose literal and symbolic death transcendence is built into their way of living, generative individuals possess symbolic immortality, and, thus, may be less likely to employ typical worldview defense in the face of mortality salience. As mentioned previously, Jonas and Fischer (2006) found that people who were intrinsically religious and who had an opportunity to reaffirm those religious beliefs demonstrated less death-thought accessibility and less worldview defense. It could be interesting to see if that same pattern holds for people who are highly generative.

We know that people who have different personality types respond differently to mortality salience. For example, people who are high authoritarians disparage dissimilar others after mortality salience, whereas people who are low authoritarians do not

(Greenberg et al., 1990). However, we do not know whether being in different developmental stages (e.g., emerging adult versus young adult versus middle adult/generativity) is related to differences in mortality salience effects. Nor do we know whether successfully resolving the task of a particular developmental stage (e.g., becoming generative versus self-absorbed) moderates mortality salience effects. It may be that an emerging adult who is generative responds differently to mortality salience than does an older adult who is generative. It may also be that an emerging adult who is generative responds differently to mortality salience than does an older adult who is stagnated. These are all possibilities that could be explored in future research.

Other studies have not investigated whether an attack on the aspects of one's worldview that have been shown to be related to less cultural worldview defense, such as an attack on one's tolerance, or an attack on one's liberalism, would lead to increased mortality salience effects. The findings from the current study would indicate that, after mortality salience, a person whose tolerance plays a significant part in his/her worldview would defend the value of being tolerant, even if he/she would not defend his/her nationalistic worldview.

The results of this study have strengthened TMT, have suggested extensions of the theory, and have engendered numerous possibilities for future research. This investigation of worldview defense and personal ideology has utilized an operationalized definition of overall worldview and has extended the anxiety buffer hypothesis of TMT to include defense of overall worldviews after mortality salience. This will allow future TMT research to investigate further whether and how overall worldview impacts TMT dynamics. The results of analyzing where in the TMT model individual difference

variables potentially moderate mortality salience effects suggested that individual differences in personal ideology do not affect proximal defenses or priming of death thoughts. Rather, they have their effect between death thoughts that are outside conscious awareness and worldview defense. This clarifies past research and sets the stage for future inquiries into the impact of individual differences on TMT dynamics.

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Appendix

The Gratitude Questionnaire -Six Item Form (GQ-6)

Using the scale below as a guide, write a number beside each statement to indicate how much you agree with it.

1 = strongly disagree

2 = disagree

3 = slightly disagree

4 = neutral

5 = slightly agree

6 = agree

7 = strongly agree

_____1. I have so much in life to be thankful for.

_____2. If I had to list everything that I felt grateful for, it would be a very long list.

_____3. When I look at the world, I don't see much to be grateful for.

_____4. I am grateful to a wide variety of people.

_____5. As I get older I find myself more able to appreciate the people, events, and situations

　　　that have been part of my life history.

_____6. Long amounts of time can go by before I feel grateful to something or someone.

Scoring Instructions:

1. Reverse scores for items 3 and 6.

2. Add scores for items 1-6, using reversed scores for items 3 and 6.

Modified Polarity Scale

Instructions: Consider each of the following 40 pairs of ideas and check which of them you agree with. **Please read BOTH statements in each item first**. If you agree with both of them check both of them. If you agree with neither do not check either one. If you agree only with the idea on the left then check only the box on the left. If you agree only with the idea on the right then check only the box on the right.

The maintenance of law and order is the most important duty of any government. ☐	1	Promotion of the welfare of the people is the most important function of a government. ☐
To assume that most people are well-meaning brings out the best in others. ☐	2	To assume that most people are well-meaning is asking for trouble. ☐
Parents should first of all be gentle with children. ☐	3	Parents should first of all be firm with children. ☐
Children must be loved so that they can grow up to be fine adults. adults. ☐	4	Children must be taught how to act so that they can grow up to be fine ☐
What children demand should be of little consequence to their parents. ☐	5	What children demand, parents should take seriously and try to satisfy. ☐
When people are in trouble, they should help themselves and not depend on others ☐	6	When people are in trouble, they need help and should be helped. ☐
Competition brings out the best in human beings. ☐	7	Cooperation brings out the best in human beings. ☐
The most important characteristic of friends is that they are worthy of our admiration and respect. ☐	8	The most important characteristic of friends is that they are warm and responsive to us. ☐

The main thing in the world is
to know yourself and be yourself.

☐

9   The main thing in the world is to
try to live up to the highest
standards.

☐

The main purpose of education should be
to enable the young to discover and
create novelty.

☐

10   The main purpose of education
should be to teach the young the
wisdom of the remote and recent past.

☐

Juvenile delinquency is simply a reflection
of the basic evil in human beings. It has
always existed in the past and it always
will.

☐

11   Juvenile delinquency is due to
factors we do not understand.
When we do understand these we
will be able to prevent it in the future.

☐

When you face death you learn how
basically insignificant you are.
life.

☐

12   When you face death, you learn who
you really are and how much you loved

☐

The main thing in science is to be
right and make as few errors as possible.

☐

13   The main thing in science is to strike
out into the unknown - right or
wrong.

☐

Great achievements require
first of all great imagination.

☐

14   Great achievements require
first of all severe self-discipline.

☐

If human beings were really honest with
each other, there would be a lot more
hostility and hatred in the world.

☐

15   If human beings were really honest with
each other, there would be a lot
more sympathy and friendship in the
world.

☐

The beauty of theorizing is that it has
made it possible to invent things that
otherwise never would have existed.

☐

16   The trouble with theorizing is that it
leads people away from facts and
substitutes opinions for truth.

☐

Imagination leads people into delusions.

☐

17   Imagination frees people self-
deception and from the dull routines.

☐

Thinking is responsible for all discovery and invention.

☐

18   Thinking keeps people on the straight and narrow.

☐

Observing the world accurately enables human beings to separate reality from imagination.

☐

19   Observing the world accurately provides a human being with constant excitement and novelty.

☐

Fear can make the bravest person tremble. We should not condemn a failure of nerve.

☐

20   Cowardice is despicable and in a soldier should be severely punished.

☐

When a person feels sorry for one's self, she/he really needs more sympathy.

☐

21   When a person feels sorry for one's self she/he should feel ashamed.

☐

Some people can only be changed by humiliating them.

☐

22   No one has the right to humiliate another person.

☐

No one has the right to threaten or punish another person.

☐

23   Some people respond only to punishment or the threat of punishment.

☐

Human beings are basically evil.

☐

24   Human beings are basically good.

☐

Those who err should be forgiven.

☐

25   Those who err should be corrected.

☐

Anger should be directed against the oppressors of humankind.

☐

26   Anger should be directed against revolutionaries who undermine law and order.

☐

Familiarity, like absence, makes the heart grow fonder.

☐

27   Familiarity breeds contempt.

☐

You cannot understand another human being until you have achieved some distance from that person.

☐

28 You cannot understand another human being unless you have loved and been intimate with that person.

☐

Reason is the chief means by which humans make great discoveries.

☐

29 Reason has to be continually disciplined and corrected by reality and hard facts.

☐

The changeableness of human feelings is a weakness in human beings.

☐

30 The changeableness of human feelings makes life more interesting.

☐

Human beings should be loved at all times, because they want and need to be loved.

☐

31 Human beings should be loved only if they have acted so that they deserve to be loved.

☐

There are a great many things in the world which are good for humans and which satisfy them in different ways. This makes the world an exciting place and enriches the lives of humans.

☐

32 There are a great many things which attract human beings. Some of them are proper but many are bad for humans and some are very degrading.

☐

Children should be seen and not heard.

☐

33 Children are entirely delightful.

☐

In order to live a good life you must act like a good person and observe the rules of morality.

☐

34 In order to live a good life you must satisfy both yourself and others.

☐

Mystical experiences may be sources   35
of insight into the nature of reality.

☐

So-called mystical experiences have most often been a source of delusion.

☐

You must always leave yourself open to your own feelings --alien as they may sometimes seem.

☐

36 If sanity is to be preserved, you must guard yourself against the intrusion of feelings which are alien to your nature.

☐

To act on impulse is to act childishly.

☐

Human beings should be treated with respect at all times.

☐

There is no surer road to insanity than surrender to the feelings, particularly those which are alien to the self.

☐

The mind is like a lamp which illuminates whatever it shines on.

☐

37 To act on impulse makes life interesting.

☐

38 Human beings should be treated with respect only when they deserve respect.

☐

39 There is a unique avenue to reality through the feelings, even when they seem alien.

☐

40 The mind is like a mirror which reflects whatever strikes it.

☐

Scoring of Personal Ideology:

This measure results in two scores, one for Humanism (HUM) and one for Normativism (NORM). One's Humanism score equals the number of humanistic statements endorsed and one's Normativism score is the number of normative statements endorsed.

NORM	1	**HUM**		NORM	8	**HUM**
HUM	2	NORM		**HUM**	9	NORM
HUM	3	NORM		**HUM**	10	NORM
HUM	4	NORM		NORM	11	**HUM**
NORM	5	**HUM**		NORM	12	**HUM**
NORM	6	**HUM**		NORM	13	**HUM**
NORM	7	**HUM**		**HUM**	14	NORM
				NORM	15	**HUM**

_____

HUM	16	NORM		**HUM**	25	NORM
NORM	17	**HUM**		**HUM**	26	NORM
HUM	18	NORM		**HUM**	27	NORM
NORM	19	**HUM**		NORM	28	**HUM**
HUM	20	NORM		**HUM**	29	NORM
HUM	21	NORM		NORM	30	**HUM**
NORM	22	**HUM**		**HUM**	31	NORM
HUM	23	NORM		**HUM**	32	NORM
NORM	24	**HUM**				

_____

NORM	33	**HUM**
NORM	34	**HUM**
HUM	35	NORM
HUM	36	NORM
NORM	37	**HUM**
HUM	38	NORM
NORM	39	**HUM**
HUM	40	NORM

American identity

How important is your American identity to you?

1	2	3	4	5	6	7	8	9

not at all
important

extremely
important

Mortality Salience Induction

On the following page are two open-ended questions, please respond to them with your first, natural response.

We are looking for peoples' gut-level reactions to these questions.

_____

The Projective Life Attitudes Assessment

This assessment is a recently developed, innovative personality assessment. Recent research suggests that feelings and attitudes about significant aspects of life tell us a considerable amount about the individual's personality. Your responses to this survey will be content-analyzed in order to assess certain dimensions of your personality. Your honest responses to the following questions will be appreciated.

1. PLEASE BRIEFLY DESCRIBE THE EMOTIONS THAT THE THOUGHT OF YOUR OWN DEATH AROUSES IN YOU.

_____
_____
_____
_____
_____
_____
_____

2. 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 PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way at the moment, that is, how you feel right now.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

_____interested   _____irritable

_____distressed   _____alert

_____excited   _____ashamed

_____upset   _____inspired

_____strong   _____nervous

_____guilty   _____determined

_____scared   _____attentive

_____hostile   _____jittery

_____enthusiastic   _____active

_____proud   _____afraid

Rosenberg Self-Esteem Scale

Strongly Agree   Agree   Disagree   Strongly Disagree

         3   2   1   0

1. _____I feel that I am a person of worth, at least on an equal plane with others.

2. _____I feel that I have a number of good qualities.

3. _____All in all, I am inclined to feel that I am a failure.

4. _____I am able to do things as well as most people.

5. _____I feel I do not have much to be proud of.

6. _____I take a positive attitude toward myself.

7. _____On the whole, I am satisfied with myself.

8. _____I wish I could have more respect for myself.

9. _____I certainly feel useless at times.

10. _____At times I think that I am no good at all.

Death-thought Accessibility

Death-thought

SAMPLE WORD COMPLETION TASK

We are simply pre-testing this questionnaire for future studies. Please complete the following by filling letters in the blanks to create words. Please fill in the blanks with the first word that comes to mind. Write one letter per blank. Some words may be plural. Thank you.

1. BUR _ _ D

2. PLA _ _

3. _ _ OK

4. WAT _ _

5. DE _ _

6. MU _ _

7. _ _ NG

8. B _ T _ LE

9. M_ J _ R

10. P _ _ TURE

11. FL _ W _ R

12. GRA _ _

13. K _ _GS

14. CHA _ _

15. KI _ _ ED

16. CL _ _ K

17. TAB _ _

18. W _ _ DOW

19. SK _ _ L

20. TR _ _

21. P _ P _ R

22. COFF _ _

23. _ O _ SE

24. POST _ _

25. R _ DI _

Neutral Thought

SAMPLE WORD COMPLETION TASK

We are simply pre-testing this questionnaire for future studies. Please complete the following by filling letters in the blanks to create words. Please fill in the blanks with the first word that comes to mind. Write one letter per blank. Some words may be plural. Thank you.

1. SP _ _ N

2. FA _ T _ R

3. M _ _ EL

4. RE _ _ RD

5. DR _ S _ R

6. SN _ AKE _

7. _ _ AP

8. _ _ GHT

9. _ E _ SON

10. PH _ N _

11. _ _ ORT

12. CO _ _ C

13. BR _ _ K

14. _ _ EK

15. M _ _ N

16. P _ LL _ W

17. PL _ _

18. C _ BI _ ET

19. _ _ BE

20. _ A _ D

21. S _ _ DY

22. P _ _ TY

23. ST _ R _ O

24. _ IR _

25. NO _ _ L

Worldview Defense Essays

Social Judgment Task

Please read each of the following essays and respond to the questions that follow each essay.

Pro American

The first thing that hit me when I came to this country was the incredible freedom people had. Freedom to go to school, freedom to work in any job you want. In this country people can go to school and train for the job they want. Here anyone who works hard can make their own success. In my country most people live in poverty with no chance of escape. In this country people have more opportunity for success than in any other and success does not depend on the group belong to. While there are problems in any country, America truly is a great nation and I don't regret my decision to come here at all.

Questions:

1. How much do you like this person?

 1   2   3   4   5   6   7   8   9

not at all   totally

2. How intelligent did you think this person was?

 1   2   3   4   5   6   7   8   9

not at all   totally

3. How knowledgeable did you think this person was?

 1   2   3   4   5   6   7   8   9

not at all   totally

4. How much did you agree with this person's opinion?

 1   2   3   4   5   6   7   8   9

not at all   totally

5. From your perspective, how true do you think this person's opinion is?

 1   2   3   4   5   6   7   8   9

not at all   totally

Anti American

When I first came to this country from my home in _____ I believed it was the "land of opportunity" but I soon realized this was only true for the rich. The system here is set up for rich against the poor. All people care about here is money and trying to have more than other people. This no sympathy for people. Its all one group putting down others and nobody cares about the foreigners. The people only let foreigners have jobs like pick fruit or wash dishes because no American would do it. Americans are spoiled and lazy and want everything handed to them. America is a cold country that is unsensitive to needs and problems of foreigners. It thinks it's a great country but its not.

Questions:

1. How much do you like this person?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

2. How intelligent did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

3. How knowledgeable did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

4. How much did you agree with this person's opinion?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

5. From your perspective, how true do you think this person's opinion is?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

Pro Normativism

During my lifetime, I have learned a lot about human nature. Although it would be nice to think that people are all good at heart, the truth is that most people only have their own best interests in mind. In fact, if people were actually honest with each other, I think we would find much more hostility and hatred in the world. Even without complete honesty, all you have to do is open your eyes to see how humans fight constantly. That's not to say that all people are bad. I think we can all agree that friends who are worthy of our admiration and respect add to our lives and may even help us live up to the high standards and rules of morality that we should always strive towards.

Questions:

1. How much do you like this person?

1   2   3   4   5   6   7   8   9

not at all   totally

2. How intelligent did you think this person was?

1   2   3   4   5   6   7   8   9

not at all   totally

3. How knowledgeable did you think this person was?

1   2   3   4   5   6   7   8   9

not at all   totally

4. How much did you agree with this person's opinion?

1   2   3   4   5   6   7   8   9

not at all   totally

5. From your perspective, how true do you think this person's opinion is?

1   2   3   4   5   6   7   8   9

not at all   totally

Pro Humanism

Throughout my life, I have learned that humans are amazing creatures. We perceive our surroundings and are able to make meaning and find reality in the constant stream of information we receive. Although we often do bad things, we have mostly good intentions, and, despite our mistakes, we are all able to (and need to) give and receive love. Beyond just love, we are able to experience a wide range of emotions that help us to have more full experiences and to interact with the world. When children are given a loving, nurturing environment within which they can explore the world, experience their emotions, and use their active imaginations, there is no limit to what they can achieve.

Questions:

1. How much do you like this person?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

2. How intelligent did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

3. How knowledgeable did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

4. How much did you agree with this person's opinion?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

5. From your perspective, how true do you think this person's opinion is?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

Anti-Humanism

I just do not understand how some people can think that humans are inherently good, that they actually construct their own reality, and that experiencing the world and emotions is more important than following conventions. Look at all of the horrible things that people do to each other on a daily basis. Is that goodness? I don't see how it could be that we live in a reality created by such imperfect beings. Allowing openness to experiences and emotions seems foolish given that it only steers us away from our goals. Similarly, loving, nurturing, and allowing children to express their feelings only harms the children by making them into weak adults who cannot function in the reality of our harsh world.

Questions:

1. How much do you like this person?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

2. How intelligent did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

3. How knowledgeable did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

4. How much did you agree with this person's opinion?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

5. From your perspective, how true do you think this person's opinion is?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

Anti-Normativism

I have a lot of trouble with people who believe that there is one "truth" and one "right way" of being and that people don't deserve love and respect unless they are living out the norms and rules that put them on that "right path." These people take their children and mold them to fit all of the parents' expectations, totally stifling their individuality, creativity, and emotional experiences. According to these people, allowing emotional experiences equals weakness and means you are not following the norms that keep you on the "right path." But how can anyone know what the "right path" is? There is no one perfect was of being. There are many different ways to be a good human being, even if that means following a different path.

Questions:

1. How much do you like this person?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

2. How intelligent did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

3. How knowledgeable did you think this person was?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

4. How much did you agree with this person's opinion?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally

5. From your perspective, how true do you think this person's opinion is?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

not at all   totally