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Religion as a Moderator of Mortality Salience Effects

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Abstract

Mortality salience has been shown to increase worldview defense and death anxiety, and decrease self-esteem. The study examined whether religion can moderate these effects. Participants thought about their death (mortality salience) or watching television, then received a neutral or religious passage to read, and finally completed measures of worldview defense, self-esteem, death anxiety, and tolerance. Those who thought about their death did not experience more mortality salience effects than those who thought about watching television. This finding is inconsistent with previous research, and decreased the ability to determine whether religion moderated mortality salience effects. Further analyses showed mortality salience increased reports of various religious variables, and the religious prime decreased reports of those same variables.

Religion as a Moderator of Mortality Salience Effects

Death has fascinated and frightened people from earliest human history (Tillich, 1952; Zilboorg, 1943). Terror Management Theory (TMT) addresses how humans respond to the inevitability of death, and provides a framework for understanding the psychological implications of being aware of one's mortality (Greenberg, Pyszczynski, & Solomon, 1986; Solomon, Greenberg, & Pyszczynski, 1991). Although religion has been theorized to play a role in TMT, there has been surprisingly little research examining the ways in which religion may affect individuals' responses to awareness of their mortality. This study examines how religion may influence how one responds to thoughts of death within the framework of TMT.

Terror Management Theory

TMT was developed to explain how individuals cope with awareness of their mortality (Greenberg et al., 1986; Solomon et al., 1991). The theory asserts that because humans are able to recognize their own existence (Zilboorg, 1943), they must acknowledge that they will cease to exist in the future. This awareness of one's mortality is called mortality salience, and has the potential to create paralyzing terror. TMT proposes ways in which humans cope with this terror in their everyday lives.

The processes involved in TMT are displayed in Figure 1. The first effect of mortality salience is an increase in death anxiety. Following the increase in death anxiety is a decrease in self-esteem, which occurs because one now feels vulnerable and unsure of one's continued existence. These feelings of vulnerability lead to increased defensiveness of one's world and beliefs (i.e., worldview). This defensiveness bolsters one's beliefs and reduces the feelings of vulnerability, thus increasing self-esteem. So, increased worldview defense is an effect of mortality salience that serves to eliminate its own cause (low self-esteem) by bolstering confidence in one's culture and beliefs. Further, when one's self-esteem increases, the

original death anxiety experienced after mortality salience decreases. Thus, the process of terror management, through cultural worldview defense and self-esteem bolstering, can successfully eliminate the threat of impending death, allowing one to deny or be distracted from death, and function normally in one's life (Greenberg et al., 1986).

Insert Figure 1 about here

According to TMT, self-esteem is a result of living up to the standards and values of one's culture, and is the first component of an anxiety-buffer, which protects people from the anxiety created by thinking about death (Greenberg et al., 1986). When people participate actively and positively within society, society returns to them a sense of permanence, protection, and order – qualities that allow them to feel a measure of control over their life and, consequently, death (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992). The result is increased self-esteem, and decreased death anxiety. As predicted from this model, individuals with dispositionally high self-esteem or individuals who have received a self-esteem-boosting stimulus experience weaker mortality salience effects (i.e., less death anxiety and less cultural worldview defense) than do individuals with neutral or low self-esteem (Greenberg, Solomon, et al., 1992; Harmon-Jones et al., 1997).

The second component of the anxiety-buffer is one's worldview. One's worldview includes one's society, culture, religion, values, and beliefs, which provide the permanence, protection, and order that are discussed above (Greenberg, Simon, et al., 1992). After one experiences mortality salience, one feels an increased need for the reassurance (i.e., self-esteem) that one's worldview provides. Therefore, when one experiences mortality salience, one's anxiety increases, and the comfort of the worldview is sought to decrease that anxiety. To this end, one will exhibit increased positive regard for individuals and beliefs that support

one's worldview, and increased negative regard for those that do not (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). This reaction is called cultural worldview defense. By actively defending one's worldview, the protection and order offered by that worldview is reinforced, and one experiences increased self-esteem (see Figure 1). It is believed that this defensive reaction occurs so quickly to protect the individual from mortality salience that the individual does not subjectively experience a higher level of death anxiety (Rosenblatt et al., 1989).

Factors That Affect the Terror Management Process

Although cultural worldview defense successfully eliminates death anxiety after mortality salience, it is an effect that can damage relationships between people and be a source of prejudice and hostility. Some researchers have looked for ways with which to interrupt the terror management process (see Figure 2), thereby eliminating its effects (high cultural worldview defense, low self-esteem, and high death anxiety).

Insert Figure 2 about here

Cultural Worldview Defense. One way to interrupt the terror management process is to insert a factor that would counteract the cultural worldview defense. Because cultural worldview defense involves increased prejudice toward those who threaten or transgress social values, one logical factor that could oppose cultural worldview defense would be the value of tolerance. Indeed, reminding people of the value of tolerance (i.e., priming tolerance) successfully eliminates the cultural worldview defense effect of mortality salience (Greenberg, Simon, et al., 1992).

Self-Esteem. Another way to interrupt the terror management process is to boost or protect one's self-esteem. In empirical studies, participants who have high self-esteem, or

who receive a self-esteem boost before being reminded of mortality salience, do not experience mortality salience effects (Harmon-Jones et al., 1997). In these cases, self-esteem serves to buffer the mortality salience effects. Therefore, introducing a factor to increase self-esteem after the mortality salience induction might also provide the necessary buffer to eliminate both the low self-esteem caused by mortality salience, and the resulting increase in cultural worldview defense.

Death Anxiety. Finally, preventing a person from experiencing an increase in death anxiety due to mortality salience might eliminate the ensuing effects. One way to prevent this increase is to introduce a factor that relieves death anxiety, such as a belief in an afterlife. Dechesne et al. (in press) found that the reminder of an afterlife successfully eliminated the cultural worldview defense effect. In this case, the reminder of an afterlife relieved feelings of death anxiety, so subsequent mortality salience effects (decrease in self-esteem and increase in cultural worldview defense) were not present.

Religion and Terror Management Theory

The studies described above show that each effect of mortality salience (high cultural worldview defense, low self-esteem, and high death anxiety) can be successfully eliminated if participants are reminded of the value of tolerance, receive a self-esteem boost, or are relieved of their death anxieties through an afterlife belief. As described below, there is reason to believe that religious concepts can affect all three factors, and may be an effective deterrent of the outcomes of mortality salience.

Although religion and TMT have been studied separately, relatively little research has been done on possible relations between them. There is much to suggest that religion would play a role in TMT to decrease the effects of mortality salience. Specifically, religion has been mentioned in TMT as a possible component of one's worldview (Rosenblatt et al.,

1989). Also, religion is traditionally associated with death, and often provides comfort and support to those dealing with death, often through rituals and beliefs. Therefore, it is possible that religion may be able to influence the mortality salience effects of cultural worldview defense, self-esteem, and death anxiety. However, it seems likely that these influences will have the greatest effect depending on the degree of intrinsic religiousness.

People of an intrinsic religious orientation are typically defined as individuals who internalize and make their religious beliefs a central aspect of their lives and behaviors. This orientation differs from an extrinsic orientation in that individuals of an extrinsic religious orientation tend to value religion for the benefits it can bring them, such as security, comfort, and status within the community (Clements, 1998). An intrinsic orientation also differs from a quest religious orientation, which refers to individuals who are open to religious change, seek the “truth”, and view religious doubt as positive (Batson, Schoenrade, & Ventis, 1993; Hood et al., 1996). It is important to note that these dimensions are not mutually exclusive, and that, while individuals can show tendencies pertaining to each of the three orientations, most people will exhibit one dimension more strongly than the others (Hood et al.). Therefore, depending on the degree of one’s intrinsic religious orientation, religion may be able to decrease cultural worldview defense and death anxiety, and increase self-esteem and tolerance.

Cultural Worldview Defense. If one is intrinsically religious, religion may moderate cultural worldview defense through tolerance. In general, most religions do teach the value of tolerance (Hood et al., 1996) and tolerance itself has a close relationship to mortality salience effects. The aforementioned study by Greenberg, Simon, et al. (1992) found that for participants who were reminded of the value of tolerance, the cultural worldview defense effect of mortality salience was eliminated. Specifically, people who are high on intrinsic

dimensions of religiousness are also more tolerant and open-minded regarding differing views than are people who score higher on extrinsic dimensions of religion (Donahue, 1985).

Therefore, because an intrinsic religious orientation seems to encourage tolerance, it might counteract the cultural worldview defense effect of mortality salience, which causes individuals to be more critical of those outside their worldview (see Figure 2).

Self-esteem. Other research suggests that intrinsic religious orientations may be able to influence the mortality salience effect of threatened self-esteem. Several studies have shown that an intrinsic religious orientation is associated with higher self-esteem, whereas is a vital feature of the anxiety-buffer hypothesis, while extrinsic religious orientation is negatively correlated with self-esteem (Baker & Gorsuch, 1982; Hood et al. 1996; Wickstrom & Fleck, 1983). This greater self-esteem may be due to a higher perceived sense of control over, or a deeper meaning to, one's life that religion allows. Additionally, it may be due to a perceived personal relationship with a "divine other," causing one to feel worthy and loved (Sherkat & Reed, 1992). Each of these examples has shown that intrinsic religious orientations may bolster self-esteem. Increases in self-esteem, in turn, can reduce the effects of mortality salience. Therefore, because intrinsic religiousness can act as a source of self-esteem, it might provide the self-esteem boost necessary to counteract the effects of mortality salience (see Figure 2).

Death Anxiety. Most religions also contain beliefs and rituals pertaining to an afterlife (Hood, Spilka, Hunsberger, & Gorsuch, 1996). This possibility of an afterlife provides belief in a literal immortality to people (Greenberg et al., 1995; Hood et al., 1996). A belief in literal immortality neatly solves the problem of death, the end of one's existence, and one's drive for self-preservation, by allowing one to continue to exist after death. Indeed, Dechesne et al. (in press) found that priming the concept of an afterlife, thus reminding individuals of

the possibility of an afterlife, eliminates mortality salience effects. In addition, most empirical research supports the theory that religion decreases death anxiety through prayer, rituals, institutions, tradition, beliefs, and the like, and also because it provides a worldview of a just God, an afterlife, and a sense of hope about one's purpose and future (Hood et al., 1996). These findings further support the hypothesis that religion may moderate the effects of mortality salience.

Specifically, intrinsic religious orientations seem to influence the degree of death anxiety reduction experienced by people. Clements (1998) found that individuals who had more intrinsically-oriented religiousness experienced lower levels of death anxiety than those who were more extrinsically-oriented. Therefore, because religion is expected to alleviate death anxiety, especially for intrinsically religious orientations (see Donahue, 1985; Homans, 1965), it might counteract the death-anxiety increase following mortality salience, eliminating the consequent cultural worldview defense (see Figure 2).

Present Study and Hypotheses

For the reasons described above, there is good reason to believe that, for people who are highly intrinsically religious, priming religion will lead to an increase in self-esteem, and decrease worldview defense and death anxiety. People who are intrinsically religious are likely to have a religious schema that encompasses the beliefs that reduce death anxiety, and support self esteem and tolerance (McIntosh, 1995). Just as priming tolerance (Greenberg, Simon, et al., 1992) and afterlife (Dechesne et al., in press) reduces cultural worldview defense, I believe that priming religion will remind intrinsically religious people of an afterlife, self-esteem, and tolerance, thus decreasing cultural worldview defense.

The present study examines the moderating role that religion may play in mortality salience effects (see Figures 2 and 3). In general, I will examine the effects of a religious

versus a neutral prime on worldview defense. Specifically, I hypothesize that for participants with neutral self-esteem and high intrinsic religiousness, those exposed to the religious stimulus (i.e. primed) after the induction of mortality salience should show less cultural worldview defense than participants with neutral self-esteem who experience mortality salience effects but are not primed for religion. It was necessary to the study that the participants deemed “religious” possess a religious schema, as mentioned above, and so are also comfortable with their beliefs, have internalized these beliefs, and are responsive to a religious prime, or reminder. Therefore, because the definition and evidence for intrinsic religious orientations seemed to fit these criteria the best, this orientation was used as the measure of religiousness.

Insert Figure 3 about here

Moreover, I will test changes in self-esteem, death anxiety, and tolerance to evaluate the degree to which priming religion affects the three theorized reasons why religion might reduce cultural worldview defense (i.e., increasing self-esteem and tolerance, decreasing death anxiety). Therefore, I believe that participants exposed to the religious prime should have higher reported self-esteem and intercultural tolerance, and lower reported death anxiety than those not exposed to the religious prime.

Method

Participants

Ninety-five undergraduate psychology students (26 male and 69 female) from the University of Denver participated in this study. All were over 18 years of age, and received compensation in the form of extra credit. The sample consisted of 10 different religious denominations, the most numerous denominations being Catholicism (24), non-

denominational Christianity (22), Protestantism (13), and Judaism (7). Nine participants indicated they had no religious beliefs. The sample had a mean religiousness of 5.96 and mean religious behavior of 2.53. Thirty-two participants scored high on the intrinsic religious dimension, 32 on the extrinsic religious dimension, and 65 on the quest religious dimension (note that the dimensions were not mutually exclusive, and it was possible to score high on more than one dimension of religious orientation).

Participants who reported high self-esteem (top 25th percentile in sample) were excluded, as people with high self-esteem experience lower levels of cultural worldview defense (Harmon-Jones et al., 1997). Additionally, 63 participants who indicated that they were not highly intrinsically religious were removed, as intrinsic religiousness was thought to be necessary in order to decrease mortality salience effects. In total, 71 participants were removed from the initial sample, resulting in 24 participants (3 male and 21 female) who were included because they were highly intrinsically religious and did not have high self-esteem. This sample had a mean religiousness of 8.04 and mean religious behavior of 3.42. The most numerous religious denominations were non-denominational Christian (9), Catholicism (6), and Protestant (5).

The study was a 2 (mortality salience manipulation) x 2 (religious prime) between subjects design. The study was presented in a packet format containing the mortality salience or neutral salience manipulation, religious or neutral prime, worldview defense questionnaires, and measures of self-esteem, death anxiety, intercultural tolerance, and religious variables (see Appendix A for the measures and Table 1 for packet order). Participants were randomly assigned to one of the four conditions; the order of the worldview defense essays was counterbalanced within the conditions. Participants completed the packets by themselves in a large classroom.

Insert Table 1 about here

Materials and Stimuli

Mortality Salience Manipulation. An open-ended two-question manipulation was used to induce mortality salience. This manipulation has been successfully used in previous studies (e.g. Greenberg et al., 1995; Rosenblatt et al. 1989). Participants were asked to respond to the questions as follows: “Please briefly describe the emotions that the thought of your own death arouses in you; jot down, as specifically as you can, what you think will happen to you physically as you die and once you are physically dead.” Half of the participants received a neutral manipulation, instructing them to think about the act of watching television, rather than death and dying.

Religion Prime. A two-page passage modified from a Genesis creation story (Genesis 1:1-2:20, World English Bible) was used to prime religion in half the participants. Words relating to tolerance, salvation, affect, and an afterlife were removed, to avoid direct references to these concepts, which might influence mortality salience effects, as well as words relating to gender with regard to the deity, in order to broaden its acceptability across beliefs and denominations. Half the participants received a neutral prime, consisting of two-page passage from Albert Camus’ “The Growing Stone” (Camus, 1957/1991). It is a descriptive passage, without any reference to spiritual, affective, or death-related matters. This passage has been used successfully in previous studies as a neutral delay after the mortality salience induction and before the measurement of cultural worldview defense variables (Greenberg et al., 1994). Both passages were roughly the same length, and both were descriptive in nature.

Pilot testing of these passages found that the religious passage primed religion-related thoughts. Individuals ($n=9$) who read the religious prime supplied more religious words ($M=3.22$, $SD=1.20$) in a subsequent word-completion task compared to individuals ($n=9$) who read the neutral prime ($M=1.33$, $SD=.87$), $t(16)=3.83$, $p=.001$. All religious words from the word-completion task were absent from both passages, to prevent priming for those specific words. See Appendix B for word completion task.

Post-experiment Positive Mood Induction. To eliminate any changes in mood due to the mortality salience manipulation or cultural worldview threat (essays), participants were asked to describe something that made them happy.

Measures

Self-Esteem Measure. The 10-item Rosenberg Self-Esteem Scale (1965) was included at the beginning of the packet to assess the initial self-esteem of the participants (to screen out above average self-esteem participants). It was also included at the end of the packet to measure any change in self-esteem following the religion prime. This measure has proven to be valid and reliable, and has been successfully used in previous TMT studies (e.g. Greenberg, Solomon, et al., 1992; Harmon-Jones et al., 1997). In this study, the scale was found to be reliable (Cronbach's alpha = .89).

Cultural Worldview Defense. Participants were asked to read two short, handwritten essays, and told that the essays were written by foreign students attending the University, answering the question "What is your opinion of the United States?". One essay was critical of the United States, emphasizing greed, economic inequities, and lack of sympathy for people, whereas the other was supportive of the United States, emphasizing freedom, opportunity, and upward mobility. The essays are minor modifications of those previously used successfully to assess cultural worldview defense (Greenberg, Simon, et al., 1992; T.

Pyszczynski, personal communication, October 22, 2002). Following each essay, the participants received an evaluation form with which to rate the essay using a 9-point scale (1=not at all, 9=totally) on three items (is this person's opinion well-informed; how much do you agree with this person's opinion; how true do you think this person's opinion is of the topic they discussed?), and the author on three items (how much do you think you would like this person; how intelligent do you believe this person to be; how knowledgeable do you believe this person to be?). The ratings for the author and content of the essays were combined to form a total score, which represented how the participants felt toward the essays in general. The scale was found to be reliable when rating both the pro-United States ($\alpha=.83$) and anti-United States ($\alpha=.92$) essays.

Intercultural Tolerance Scale. This scale, created by Mendleson, Bures, Champion, and Lott (1997), consisted of 32 questions, and measured how tolerant the participants were of differing cultures, across eight themes: language, immigration, food and clothing, religion, patriotism or nationalism, economics, values, and social customs. Each item is rated on a five-point scale (1=strongly disagree, 5=strongly agree). Though this scale has not yet been widely used, initial tests indicate that it is a reasonably reliable measure and has shown to be valid; for example, those with extensive exposure to other cultures also score higher on the intercultural tolerance scale than those with minimal or no exposure (Mendleson et al., 1997). For this study, items 3, 7, 15, and 38 were removed to improve reliability ($\alpha=.86$).

Revised Death Anxiety Scale. This scale, developed by Thorson and Powell (1994), consisted of 25 questions, and measured the participants' level of death anxiety using a five-point scale (1=strongly disagree, 5=strongly agree). It is a modified version of Templer's (1970) Death Anxiety Scale (DAS), a widely-used measure of death attitudes. The scale measures such aspects as the participants' feelings towards dying and their own death, as well

as aspects related to death, such as coffins, putting their affairs in order, and serious illnesses. Preliminary tests of the Revised Death Anxiety Scale indicates it has favorable reliability and validity (Neimeyer, 1998; Thorson & Powell, 1994). In this study, items 16 and 24 were removed to improve reliability ($\alpha = .9179$).

Religious Information. Religious information was gathered about the participants regarding their religious faith/denomination and behaviors, the strength of their beliefs, and their religious orientation (i.e., intrinsic/extrinsic/quest). Participants were asked to list their religious faith/denomination or spiritual beliefs, as well as to rate how religious or spiritual they considered themselves to be, and how frequently they attended religious services, using a ten-point scale (1=not at all, 10=totally). Religious orientation was measured with a 9-item scale using items from the Religious Orientation Scale-Revised (Gorsuch & McPherson, 1989), a widely used, reliable measure of intrinsic and extrinsic religious orientation with a well-validated factor structure (Hill, 1999; Kirkpatrick, 1989), and the Quest Scale (Batson & Schoenrade, 1991), a well-validated measure that has been used extensively in prior research (Burris, 1999).

Demographics. Participants reported their age, gender, ethnicity, citizenship, and where they grew up.

Design and Procedure

The mortality salience prime (yes, no) and religious prime (yes, no) were the two crossed between-subjects factors. Participants were each randomly given one packet which contained one of the four above conditions.

Participants completed the packets individually in a large classroom. The researcher explained that the study examines how people differ on a variety of old and new measures and the possible relationships between them. The packets contained a set of forms in the

following order: a self-esteem scale, mortality salience or television manipulation, religious or neutral prime, pro- and anti-US essays (counterbalanced) with evaluations sheets, intercultural tolerance scale, self-esteem scale, death anxiety scale, religious information sheet, general information sheet, and positive mood induction task.

Participants' anonymity was ensured by instructing the participant to remove the consent form from the packet, and turn it in at the end of the procedure to a separate location from the packet. Following the procedure, participants received a debriefing sheet which thanked them for participating, explained the purpose of the study, and assured them that the essays they read were not written by University students, but were made up for the study. The participants were also asked not to discuss the study with other students. Finally, the participants were given contact information for the researchers and University counseling center should they experience adverse effects due to the study.

Results

Preliminary Analyses

I first examined the dependent variables (worldview defense, self-esteem, death anxiety, and intercultural tolerance) for normal distribution. All scales showed normal distribution, with no outliers. A paired-samples *t*-test was run comparing the mean ratings of the pro- and anti-United States essays. Consistent with previous studies (e.g. Greenberg et al., 1994; Harmon-Jones et al., 1997), the ratings for the anti-United States essay ($M=5.18$, $SD=1.63$) were significantly lower than those of the pro-United States essay ($M=6.24$, $SD=1.10$), $t(94)=4.80$, $p<.001$. A paired-samples *t*-test was also run using the smaller sample ($n=24$) to compare the mean ratings of the pro and anti-United States essays. Consistent with the above findings, the smaller sample also rated the anti-United States essay ($M=5.70$,

$SD=1.30$) significantly lower than the pro-United States essay ($M=6.53$, $SD=.87$), $t(23)=2.77$, $p=.01$.

Because the weakest mortality salience effects are exhibited by those who have above average self-esteem (above the 75th percentile, Harmon-Jones et al., 1997), participants who exhibited above average self-esteem were omitted from the sample. In addition, because the hypotheses are concerned only with those participants who scored high on the measure of intrinsic religiousness, I eliminated all participants who scored below the median on the measure. Therefore, the sample consisted only of 24 participants who satisfied these requirements.

Because the hypotheses examined whether the religious prime could modify mortality salience effects on worldview defense, I next examined whether a mortality salience effect was obtained in this sample. A t -test was used to compare the ratings of the pro- and anti-United States essay among participants who received the mortality salience manipulation, and those who received the television salience manipulation. In addition, these participants were only exposed to the neutral salience prime, as I needed to assess the levels of worldview defense without influence from the religious prime. There were no significant differences in the ratings of the pro-U.S. essay between the mortality salience condition and the television salience condition, $t(12)=.59$, $p=.57$. In addition, no differences were found for the anti-U.S. essay between the mortality salience condition and the television salience condition, $t(12)=.81$, $p=.44$. (See Figure 4.) These results indicate the study failed to replicate the mortality salience effect of worldview defense. See Table 2 for means and standard deviations.

Insert Table 2 and Figure 4 about here

To see whether this failure to replicate was due to using only religious participants, I also checked for the mortality salience effects on worldview defense among all participants with self-esteem below the 75th percentile. Significant effects here would replicate previous findings (see Harmon-Jones et al., 1997). However, there were no mortality salience effects on worldview defense among these 36 participants regarding the pro-U.S. essay ratings between the mortality salience condition ($M=6.36$, $SD=1.13$) or the television salience condition ($M=5.94$, $SD=1.69$), $t(34)=.89$, $p=.38$. There were also no significant differences regarding the anti-U.S. essay ratings between the mortality salience condition ($M=5.46$, $SD=.99$) or the television salience condition ($M=5.64$, $SD=1.70$), $t(34)=.39$, $p=.70$.

Tests of Hypotheses

The study hypothesized that the religious prime would moderate mortality salience effect of worldview defense. However, because there is no significant mortality salience effect that can be reduced by the religious prime, the likelihood of the predicted interaction was reduced.

Two (mortality salience) by two (religious prime) ANOVA's tested the influence of mortality salience and religious primes on worldview defense, self-esteem, death anxiety, and intercultural tolerance. I predicted a significant religious prime by mortality salience interaction, in which the effects of mortality salience would be reduced for those receiving the religious prime.

For the ratings of the anti-U.S. essay, there were no main effects for mortality salience, $F(1,20)=1.44$, $p=.25$, or the religious prime, $F(1,20)=.14$, $p=.72$. Further, the hypothesized interaction was not significant, $F(1,20)=.01$, $p=.92$. (See Figure 4.) Means and standard deviations are reported in Table 3.

Insert Table 3 about here

Similarly, for the ratings of the pro-U.S. essay, there were no main effects for mortality salience, $F(1,20)=.64, p=.43$, or the religious prime, $F(1,20)=.05, p=.83$. Further, the hypothesized interaction was not significant, $F(1,20)=.01, p=.93$. (See Table 3.)

Additionally, for self-esteem, which was expected to be higher in the religious prime condition, no main effects were found for mortality salience, $F(1,20)=.51, p=.48$, or the religious prime, $F(1,20)=2.67, p=.12$. There was also no effect for the hypothesized interaction, $F(1,20)=.004, p=.95$. See Table 4 for means and standard deviations.

Insert Table 4 about here

For death anxiety, there were no main effects for mortality salience, $F(1,20)=.14, p=.71$, or the religious prime, $F(1,20)=1.62, p=.22$. Again, there was also no interaction for death anxiety, which was expected to be lowered by the religious prime, $F(1,20)=1.55, p=.23$. (See Table 4.)

Finally, for intercultural tolerance, the ANOVA did not find a significant mortality salience effect, $F(1,20)=.26, p=.62$, or religious prime effect, $F(1,20)=2.89, p=.11$. However, there was a marginal interaction for intercultural tolerance, $F(1,20)=3.15, p=.09$. The religious prime increased intercultural tolerance, but only for participants who were exposed to the neutral salience prime. (See Table 4.)

In addition, although overall intercultural tolerance did not appear to be significantly affected, a specific type of intercultural tolerance did show significant effects. Because there were 8 subscales of intercultural tolerance, to protect against inflated Type 1 error, I divided the critical value of .05 by the total number of subscales tested, resulting in a new critical

value of $p=.006$. There was a significant effect for the religious prime: in general, participants who received the religious prime showed significantly higher immigration tolerance than those who received the neutral prime, $F(1,20)=14.63, p=.001$. Also, immigration tolerance showed a religious prime x mortality salience manipulation interaction, with the religious prime increasing immigration tolerance, especially for those who received in the neutral television salience condition, $F(1,20)=10.27, p=.004$. (See Table 4 for means and standard deviations.)

Exploratory Analyses

Because the mortality salience manipulation did not affect the expected variables in a significant manner, it was unclear whether the mortality salience manipulation was effective in inducing mortality salience at all. Therefore, tests were run to see if any of the remaining dependent variables (overall religiousness, frequency of church attendance, intrinsic/extrinsic/quest orientation) were affected by the mortality salience manipulation. These tests would be helpful in determining if the mortality salience manipulation failed to influence any of the variables; if none of the variables were affected, then one could conclude that the manipulation itself might be to blame. Conversely, if the lack of significant effects was particular only to the predicted variables (worldview defense, death anxiety, self-esteem, and intercultural tolerance) and did indeed affect other areas, one could conclude that the mortality salience manipulation was effective, but simply did not influence the predicted variables. Also, the effects of the religious prime on the religious variables were analyzed, as there is little research that examines the possible effects of religious primes on one's religious thoughts and perceptions. For the following analyses, the entire population of 95 participants was used to determine if the religious prime produced any effects in general.

First, the effects of the mortality salience manipulation on the religious variables were examined. Overall, all but two of the religious variables showed an increase after the mortality salience manipulation, although only one was significant. There was a significant increase in reported attendance of religious services in the mortality salience condition compared to the television salience condition, $t(92)=2.65, p=.01$. Because there were 3 subscales of religious orientation, to protect against inflated Type 1 error, I divided the critical value of .05 by the total number of subscales tested, resulting in a new critical value of $p=.017$. Levels of extrinsic religiousness were found to be marginally higher in the mortality salience condition than in the television salience condition, $t(91)=2.15, p=.03$. Specifically, levels of extrinsic-social religiousness were also higher in the mortality salience condition than in the television salience condition, $t(88)=2.01, p=.05$. Participants who received the mortality salience condition reported marginally higher intrinsic religiousness than those in the television salience condition, $t(91)=1.98, p=.05$. Finally, levels of quest religiousness showed a marginal increase in the mortality salience condition compared to the television salience condition, $t(90)=1.70, p=.09$. See Table 5 for means and standard deviations.

Insert Table 5 about here

Next, the effects of the religious prime on the religious variables were examined. Interestingly, all of the religious variables seemed to be negatively affected by the religious prime, although none were significant. Again, to protect against inflated Type 1 error, I divided the critical value of .05 by the three subscales tested, resulting in a new critical value of $p=.017$. Participants who received the religious prime reported marginally lower scores on intrinsic religiousness, compared to those who received the neutral prime, $t(91)=1.88, p=.06$. Levels of extrinsic religiousness among those with the religious prime were also marginally

lower compared to those with the neutral prime, $t(91)=1.92, p=.06$. Specifically, levels of extrinsic-personal religiousness decreased marginally among those with the religious prime compared to those with the neutral prime, $t(91)=1.77, p=.08$. See Table 6 for means and standard deviations.

Insert Table 6 about here

Finally, to see whether one's view of death influenced the induction of mortality salience effects, I divided participants who received the mortality salience manipulation into three groups, according to their written responses to the mortality salience questions. The first group contained those who responded to the questions with positive answers (e.g., "I will gain infinite knowledge when I die"), the second contained those with negative answers (e.g., "I don't want to leave my loved ones when I die"), and the third contained those with either neutral answers (e.g., "death is a part of life and happens to everyone") or had both positive and negative responses. Among these three groups, there were no significant effects for self-esteem, worldview defense, or intercultural tolerance. However, a one-way ANOVA revealed that participants with negative responses reported a significantly higher level of death anxiety than those with positive responses and neutral/mixed responses, $F(2,45)=5.72, p=.006$. Participants with negative responses also reported a significantly higher level of death anxiety than those who received the neutral TV salience manipulation, $t(68)=2.81, p=.006$. See Table 7 for means and standard deviations.

Insert Table 7 about here

Discussion

This study examined the possible moderating effects of religious beliefs on mortality salience effects. I hypothesized that intrinsically religious participants who thought about their own mortality, and also received a religious prime, would experience weaker mortality salience effects than participants who considered their own mortality but received a neutral prime. Specifically, those with the religious prime were expected to show less worldview defense and death anxiety, and higher self-esteem.

Before testing the main hypotheses, the mortality salience manipulation was tested to see if participants who thought about their death responded differently to subsequent measures than those who did not think about their death. In previous studies, the worldview defense effect (measured with pro- and anti-US ratings) has been used to test the efficacy of the mortality salience manipulation (e.g. Greenberg, Simon, et al. 1992). Therefore, using only participants who received the neutral prime (and so were not influenced by the religious prime), the ratings of the pro- and anti-United States essays were compared between mortality-salient and television-salient conditions. A significant effect here would replicate other mortality salience research (e.g. Greenberg et al., 1994; Harmon-Jones et al., 1997). However, despite the previous findings, those who thought about death did not rate the pro-US essay more favorable and anti-US essay more negatively than those who thought about the neutral topic. This suggests that the mortality salience manipulation used in this sample failed to produce the expected mortality salience effect of worldview defense.

Because the same mortality salience manipulation used in this study was used successfully in numerous previous studies, it is difficult to conclude why mortality salience effects were not found. One possibility is that the manipulation induced mortality salience,

but was not strong enough to affect subsequent measures of death anxiety, self-esteem, and worldview defense. Also, there may have been an inherent difference between the sample used in this study, and the sample used in previous studies. However, given that most of the previous samples consisted of undergraduate college students, as this one did, it is unlikely there were differences in the population. Possibly the mortality salience manipulation only produces the traditional effects under certain circumstances.

Current events may have affected the participants' reactions to mortality salience. Events over the past two years have produced changes in the American society, where people may feel continuously exposed to potentially life-threatening stimuli in every day life (orange alerts, war on terrorism, war with Iraq, threat of biological/chemical weapons, etc.). Perhaps people who are continually reminded of the possibility death also adjust their thoughts and feelings so as not to experience continuous mortality salience effects (increased death anxiety and worldview defense, and decreased self-esteem). Therefore, when faced with yet another stimulus that induced mortality salience, as did the manipulation in this study, perhaps mortality salience effects are muted or less apparent. Conversely, Greenberg et al. (1994) found that mortality salience effects are weakened and sometimes even eliminated when one thinks deeply about death or is exposed to very strong or blatant reminders of death. Therefore, the strongest mortality salience effects result from subtle mortality reminders, or when mortality concern is highly accessible but not in one's immediate attention. Although in this study participants were distracted by reading a passage after the mortality salience manipulation, a distraction used successfully in other studies (see Greenberg et al., 1994; Harmon-Jones et al., 1997), it is possible that, due to recent events, the mortality salience manipulation was received as too strong a reminder of mortality or was unable to be relegated to the fringes of one's consciousness, and mortality salience effects were weakened or

eliminated. Additionally, recent events, such as the war on terror or the war in Iraq, may have affected levels of worldview defense. It may be that baseline worldview defense levels are higher due to these recent events, leaving little room for influence by the mortality salience manipulation. Political circumstances surrounding the war in Iraq may also have cemented people's opinions regarding pro- and anti-American sentiments. That is, as people choose political positions for or against the actions of the United States government leading up to and during the war in Iraq, the mortality salience manipulation may be less able to influence those opinions. A similar possibility was voiced by Matz, Evans, Geisler, and Hinsz (1996), who also failed to replicate mortality salience effects. The researchers wondered if the 1996 Republican presidential primaries, during which the study was conducted and which voiced a generally negative view of immigration, may have influenced the ratings of the pro- and anti-US essays (which participants are told are written by foreign students), regardless of mortality salience. Therefore, in this study as in Matz et al. study, the outcome variables, particularly worldview defense, may be vulnerable to external events, which may cause pro- or anti-United States polarization and leave little room for influence by the level of mortality salience that can be induced experimentally.

The failure to produce mortality salience effects might also be explained in the context of terror management theory. Perhaps the induction of mortality salience and its subsequent effects involves aspects of human cognition or behavior that have not yet been identified by terror management theory. As noted by Matz et al. (1996), given that terror management theory is presented as a general theory of social behavior, the apparent frailty of mortality salience effects raises questions about the validity of the terror management theory.

Finally, to attempt to understand the failure to replicate mortality salience effects for those who received the mortality salience manipulation, I examined the responses of

participants to the manipulation questions, to determine whether different response may influence the ability to induce mortality salience effects. I identified three categories of responses (positive, negative, neutral/mixed) to the question, "Please briefly describe the emotions that the thought of your own death arouses in you." The first group contained those who responded to the questions with positive answers (e.g., "I will gain infinite knowledge when I die"), the second contained those with negative answers (e.g., "I don't want to leave my loved ones when I die"), and the third contained those with either neutral answers (e.g., "death is a part of life and happens to everyone") or had both positive and negative responses. Among these three groups, participants with negative responses reported a significantly higher level of death anxiety than those with positive responses and neutral/mixed responses. Participants with negative responses also reported a significantly higher level of death anxiety than those who received the neutral TV salience manipulation. This suggests that the mortality salience manipulation may increase death anxiety, which is a vital component of terror management theory, but only among those who hold a negative view of death. However, because participants in the television salience condition were not asked about their views of death, I could not determine which of those participants had negative death views, and which among those also had high death anxiety. It is possible that it was the negative death view, and not the mortality salience manipulation, that led to the high death anxiety. To determine which factor led to the high death anxiety, it would have been necessary to compare the death anxiety levels of the mortality-salience/negative-deathview participants to the television-salience/negative-deathview participants. If such a comparison could be made, and a difference was present, one could conclude that the mortality salience manipulation led to the high death anxiety. Conversely, if no difference was present, then one could conclude that the high death anxiety was caused by the negative death view. However, I was unable to

compare these two groups because I did not know which of the television-salience participants had negative death views. Therefore, I could not determine whether the high levels of death anxiety were due to the mortality salience manipulation, or if people with negative death views simply have high death anxiety in general.

To determine possible problems with the materials that measured worldview defense, which may account for the difficulty in measuring at least one of the mortality salience effects, I tested the effectiveness of the pro- and anti-United States essays. Specifically, the mean ratings of the pro-U.S. essay were compared to those of the anti-U.S. essay to see if they differed. Under normal circumstances, with no prior manipulation, the anti-U.S. essay should be rated lower than the pro-U.S. essay (Greenberg et al., 1994; Harmon-Jones et al., 1997). Tests showed that the essays were rated significantly different. Therefore, the essays were successful in conveying positive and negative sentiments concerning the United States to the participants, and did not contribute to the study's inability to measure mortality salience effects.

Despite the failure of the mortality salience manipulation to increase death anxiety and worldview defense and decrease self-esteem, it did influence various religious variables. I found that participants who received the mortality salience manipulation reported higher levels of overall religiosity, and higher levels of intrinsic, extrinsic-social, and quest religiousness, than those who received the neutral television salience manipulation. This suggests that although the mortality salience did not affect the predicted variables of death anxiety, self-esteem, or worldview defense, it did succeed in increasing the participants' perceptions or reports of their own religiousness.

The study hypothesized that the religious prime would moderate the effects of mortality salience. No significant interaction was found, thus providing no support for the

hypothesis. It may be the case that the religious prime has no effect on mortality salience. This would be inconsistent with Dechesne et al. (in press), who found that priming participants of the possibility of an afterlife successfully eliminated mortality salience effects, unless priming religion does not trigger thoughts of an afterlife. In addition, problems with the mortality salience manipulation mentioned in the preceding paragraphs make it difficult to interpret the interaction. Because of these problems, there was no baseline mortality salience effect for the religious prime to decrease.

Possible effects of the religious prime on subsequent religious variables were also examined. Prior testing of the religious prime revealed that it successfully caused religion-related thoughts to be more accessible to participants than a neutral prime. Therefore, the religious prime is effective in making one think about religion. However, although this study found that there was indeed a relationship between the religious prime and religious variables, it was in the opposite direction than expected. I found that participants exposed to the religious prime reported lower overall religiosity, church attendance, and intrinsic/extrinsic/quest religiousness than those who exposed to the neutral prime, although none of these effects was significant. If the religious prime is successful in causing one to think more about religion and making religion more accessible, why would one report lower religion-related scores? One must then wonder if these participants actually felt less religious after the prime, despite religion's increased accessibility, or did they simply report lower scores? Possibly the prime could cause people to feel more self-conscious about their religious beliefs and, due to social pressures, feel the need to downplay the intensity of these beliefs. Another possibility is that exposing people to religious measures, particularly in an educational environment where religion is not usually discussed, causes them to feel threatened or uncertain as to how to react, so they distance themselves from the measures.

Finally, it is possible that when one is reminded of religion, one's standard of religiousness increases. Because of this, one might rate oneself as less religious than someone who is not reminded of religion. However, extremely little work has been done to examine the effects of a religious prime on religious variables such as these, so it is difficult to determine why this effect was found.

In addition, among participants who were highly intrinsically religious, the religious prime marginally increased intercultural tolerance. However, this effect was primarily seen only for participants who received the neutral salience manipulation. The religious prime also significantly affected immigration tolerance, a specific subtype of intercultural tolerance. In general, the religious prime increased immigration tolerance across both salience conditions (mortality and television/neutral). This effect was especially strong for participants in the neutral salience condition. These findings support my hypothesis that the religious prime would increase intercultural tolerance, especially among those who scored high on measures of intrinsic religiousness. It also suggests that religion may significantly affect only certain types of tolerance.

Due to the study's inability to replicate mortality salience effects, and the apparent success that other studies have found using the same materials and manipulations, I would be interested in replicating this study, to determine whether mortality salience effects could be obtained. If they are, it would be interesting also to test the original hypothesis, which asks whether religion can moderate mortality salience effects. If it can, it would be very useful in formulating ways with which to help people cope with life-threatening situations in a non-prejudicial manner.

Another important factor that may have influenced the results was the sample size. Due to the criteria that the participants were required to meet in order to be included in most

analyses, the sample size was very small. The number of participants in each condition were also very unequal, which may have affected results. In the sample which contained participants without high self-esteem and who were highly intrinsically religious, the sample sizes across the salience conditions (mortality vs. television/neutral) were unequal. There were more participants who fit these criteria in the mortality salience condition than in the neutral television salience condition. As I reported previously, participants who received the mortality salience manipulation reported significantly higher intrinsic religiousness. Because of this, there were more participants who reported high intrinsic religiousness in the mortality salience condition than in the neutral salience condition, and so more participants were included in the analyses in the mortality salience condition. Perhaps measuring religious orientation prior to the mortality salience manipulation would result in more equal group sizes.

Another limitation regarding the sample involves one of the effects of intrinsic religiousness. Prior research has shown that intrinsic religiousness is associated with higher self-esteem, and it was this increase in self-esteem that was expected to interfere with the mortality salience effects. However, because all participants with self-esteem above the 75th percentile were removed, the sample did not contain any intrinsically religious participants with high self-esteem. It is possible, therefore, that the remaining participants with neutral or low self-esteem may respond differently to the measures than would participants with high self-esteem.

In addition, further exploration into the effect of a religious prime on religious variables (such as general religiosity, church attendance, orientation, etc.) and non-religious outcomes (intercultural tolerance) could yield interesting results. Currently, there is very little research to be found on this topic, and the counter-intuitive results of my study concerning

these variables poses interesting questions as to why these results occurred, and if they occur in all populations and situations.

In summary, I was unable to produce the mortality salience effects of increased death anxiety and worldview defense and decreased self-esteem, using the standard mortality salience manipulation. However, the manipulation did succeed in influencing certain religious variables, causing participants to report higher levels of religiosity and intrinsic, extrinsic-social, and quest religious orientations. The religious prime also seemed to have an effect on these same variables, although the result was a decrease in these levels. Finally, the religious prime, along with high intrinsic religiousness, led to increased intercultural and immigration tolerance. However, the fact that mortality salience results could not be produced, and some were counter-intuitive or in the opposite direction than originally hypothesized, suggests that more research is needed to fully understand the interaction between these variables, and further research into terror management theory and its components is needed, to determine whether the current model is correct or should be expanded to include other factors.

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Table 1

Order of Measures and Materials in the Packet

self-esteem measure

mortality salience/neutral television salience manipulation

religious/neutral prime

worldview defense essays & ratings

tolerance measure

self-esteem measure

death anxiety measure

religious information

demographic information

Table 2

Mortality Salience Manipulation Effects on Anti- and Pro-U.S. Essay Ratings

Dependent Variable	Mortality Salience	Neutral Salience
Anti-U.S. Essay Ratings	5.64 (1.17) n=11	6.33 (1.92) n=3
Pro-U.S. Essay Ratings	6.39 (1.08) n=11	6.78 (.48) n=3

Note. The scale used to rate the essays ranged from 1 (least favorable) to 9 (most favorable). Values represent the mean ratings of the essays; values enclosed in parentheses represent standard deviations.

Table 3

*Mortality Salience Manipulation and Religious Prime Effects on Anti- and Pro-U.S.**Essay Ratings*

Dependent Variable	Prime	Mortality Salience	Neutral Salience
Anti-U.S. Essay Ratings	neutral	5.64 (1.17) n=11	6.33 (1.92) n=3
	religious	5.33 (1.47) n=7	6.17 (1.04) n=3
Pro-U.S. Essay Ratings	neutral	6.39 (1.08) n=11	6.78 (.48) n=3
	religious	6.52 (.77) n=7	6.83 (.73) n=3

Note. The scale used to rate the essays ranged from 1 (least favorable) to 9 (most favorable).

Values represent the mean ratings of the essays; values enclosed in parentheses represent standard deviations.

Table 4

Mortality Salience Manipulation and Religious Prime Effects on Self-Esteem, Death Anxiety, Intercultural Tolerance, and Immigration Tolerance Scores

Dependent Variable	Prime	Mortality Salience	Neutral Salience
Self-Esteem	neutral	3.85 (.66)	4.03 (.90)
		n=11	n=3
	religious	3.39 (.34)	3.60 (.26)
		n=7	n=3
Death Anxiety	neutral	2.98 (.72)	2.43 (1.11)
		n=11	n=3
	religious	2.99 (.28)	3.29 (1.04)
		n=7	n=3
Intercultural Tolerance	neutral	3.90 (.21)	3.74 (.46)
		n=11	n=3
	religious	3.89 (.31)	4.19 (.20)
		n=7	n=3
Immigration Tolerance	neutral	4.07 (.37)	3.33 (.38)
		n=11	n=3
	religious	4.18 (.40)	4.58 (.29)
		n=7	n=3

Note. The scale used to measure these variables ranged from 1 (low) to 5 (high). Values represent the mean score of each variable; values enclosed in parentheses represent standard deviations.

Table 5

Mortality Salience Effects on Religious Variables

Religious Variable	Mortality Salience	Neutral Salience	<i>p</i> -value
Service attendance	2.83 (1.19) n=48	2.22 (1.05) n=46	.01
Extrinsic religiousness	3.02 (.76) n=48	2.69 (.69) n=45	.03 ^a
Extrinsic-social religiousness	2.37 (.84) n=45	2.03 (.73) n=45	.05 ^a
Intrinsic religiousness	3.05 (1.20) n=48	2.58 (1.11) n=45	.05 ^a
Quest religiousness	3.62 (.73) n=47	3.35 (.80) n=45	.09 ^a

Note. The scale used to measure service attendance ranged from 1 (never) to 5 (all the time).

The scale used to measure extrinsic religiousness, extrinsic-social religiousness, intrinsic religiousness, and quest religiousness ranged from 1 (low) to 5 (high). Values represent the mean score of each variable; values enclosed in parentheses represent standard deviations.

^a = Adjusted critical value equals $p=.017$.

Table 6

Religious Prime Effects on Religious Variables

Religious Variable	Religious Prime	Neutral Prime	<i>p</i> -value
Intrinsic Religiousness	2.60 (1.17) n=48	3.06 (1.15) n=45	.06 ^a
Extrinsic Religiousness	2.72 (.75) n=48	3.01 (.70) n=45	.06 ^a
Extrinsic-Personal Religiousness	3.30 (1.01) n=48	3.66 (.90) n=45	.08 ^a

Note. The scale used to measure these variables ranged from 1 (low) to 5 (high). Values represent the mean score of each variable; values enclosed in parentheses represent standard deviations.

^a = Adjusted critical value equals $p=.017$.

Table 7

Effects of Death Views on Death Anxiety

Death View	Mortality Salience			Neutral Salience
	Negative	Positive	Neutral/Mixed	None
	3.33 (.82) _a	2.47 (.52) _b	2.82 (.47) _{ab}	2.80 (.69) _b
	n=23	n=8	n=17	n=47

Note. The scale used to measure death anxiety ranged from 1 (low) to 5 (high). Values represent mean death anxiety; values enclosed in parentheses represent standard deviations. Means with differing subscripts are significantly different at $p < .05$, using Tukey post hoc tests.

Figure Captions

Figure 1. Mortality salience/anxiety-buffer model.

Figure 2. Factors that interrupt the terror management process.

Figure 3. Expected outcomes for cultural worldview defense (as reflected by ratings of the anti-United States essay) as a result of mortality salience with and without the religious prime, and neutral (television) salience with and without the religion prime. The scale used to rate the essays ranged from 1 (least favorable) to 9 (most favorable).

Figure 4. Actual outcomes for cultural worldview defense as a result of mortality salience (MS) with and without the religious prime, and neutral (television) salience with and without the religion prime. The scale used to rate the essays ranged from 1 (least favorable) to 9 (most favorable).

Figure 1.

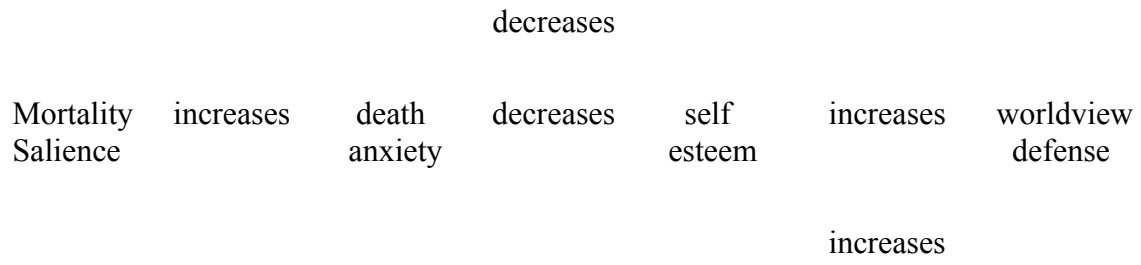


Figure 2.

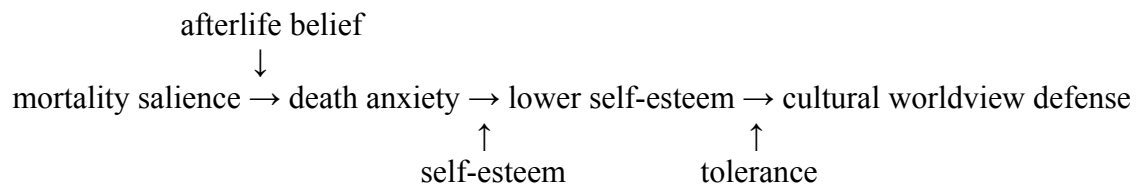


Figure 3.

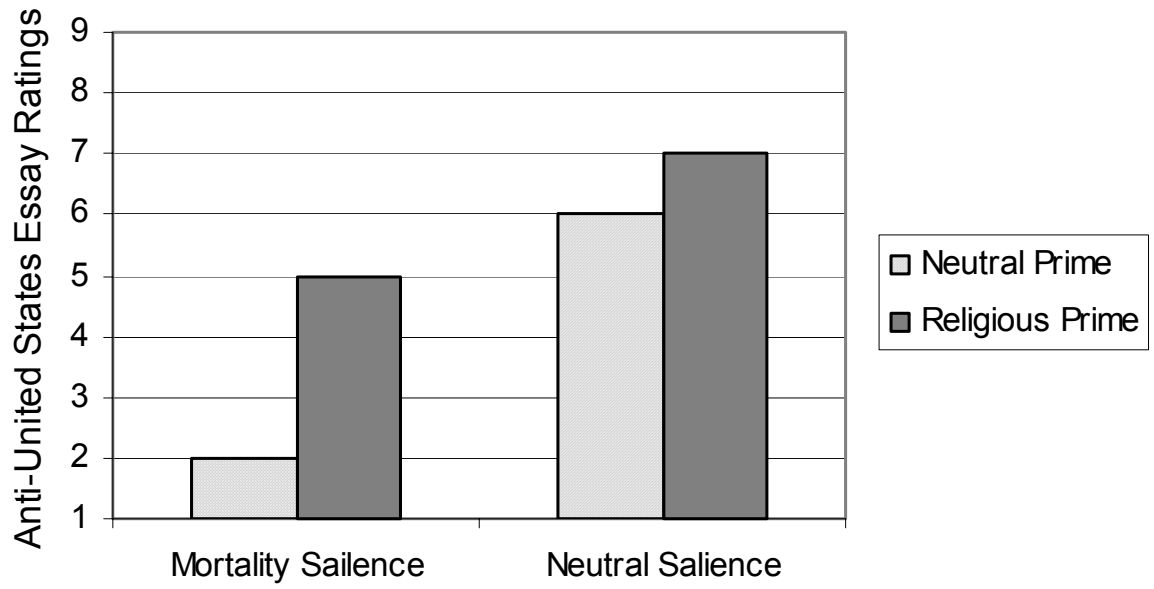


Figure 4.

